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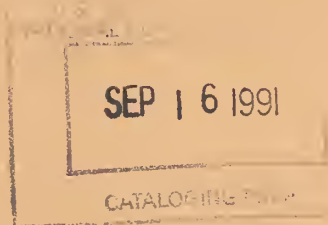
Forest  
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Computer Sciences and  
Telecommunications

January 1984



# Microcomputer Study







## MICROCOMPUTER STUDY

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## I. INTRODUCTION

### A. Background

Prior to April 1982, the fact that the acquisition of a microcomputer was governed by the same regulations that were used for mainframes caused little concern within the Forest Service. Proposals to acquire micros were relatively few in number and were handled on a routine, case-by-case basis. Over the next few months however, nearly 150 requests for technical approval to acquire micros were received.

As more and more of these appeared, it became apparent that existing policy was not only inadequate to efficiently and fairly evaluate the needs contained in them, it also failed to recognize the existence of the microcomputer phenomenon and contained few guidelines for its management. It also became apparent that neither knowledge of microcomputers nor experience with them was widespread enough within the Forest Service to allow policy development to proceed.

To help overcome these deficiencies and to partially satisfy a mounting backlog of requests, it was decided to acquire the microcomputers needed for a representative cross-section of the Forest Service user population to gain hands-on experience with them. Accordingly, Departmental concurrence was obtained to procure 100 microcomputers and to conduct a pilot on how best to manage their use.

The microcomputer user survey was first distributed July 11, 1983. Its scope was expanded to include all Forest Service microcomputers, not just those acquired specifically for study purposes. This was done since many of the study micros had not then been in place long enough so that a meaningful evaluation could be made of them.

### B. Purpose of Study

This study has been entered into to help satisfy Forest Service needs for current information concerning internal use of microcomputers. This information will be used primarily in assisting the orderly integration of micro technology into the Forest Service distributed processing environment, which is built around Departmental mainframes and in-house Forest Level Information Processing Systems (FLIPS) minicomputers. The study will also be used to establish an updated inventory of micro hardware and software and to add to an information base from which policy on microcomputer employment and management will be formulated. Additionally, our obligation to the Department to conduct a pilot microcomputer project will be fulfilled through completion of the study.

### C. Study Method and Approach

The Forest Service has been involved with microcomputer technology since its use of intelligent terminals began in the early seventies. Applications have migrated over time to microcomputers with very little attendant impact or visibility outside the implementing unit. Because

of this lack of visibility and the period of time over which microcomputers have been slowly acquired, no accurate accounting of how many existed within the Forest Service or where or how these were being utilized was available. As a consequence, it was decided to include all Forest Service microcomputers in this study, and not just those which had been specifically procured for study purposes.

To aid in information collection, a user survey was developed which addressed areas of concern as expressed by the Departmental Offices of Information Resource Management and Operations, as well as those of the Forest Service, itself. The survey consisted primarily of a series of multiple-choice questions soliciting user responses concerning micro hardware, software, management, and procurement. Respondents were encouraged to add comments to more fully express their thoughts on each issue.

Observations were arrived at by tallying responses and by analyzing prevailing sentiments as expressed in recorded comments. As a second step, users in several locations throughout the country were contacted by telephone for further information so that they could more fully expand upon their responses to the survey. In addition, several sites were visited so that first-hand observations of microcomputer operations could be made and that additional users could be contacted. The latter included Regional Offices in Atlanta, Georgia, and Missoula, Montana, the Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colorado, and several Washington Office staffs.



## II. CONCLUSIONS AND RECOMMENDATIONS

Microcomputers were introduced into the Forest Service work environment as a means of increasing productivity. Generally, this was for a limited range of tasks within a restricted local environment. Unanticipated benefits have been realized in the area of cultural adaption to automation, as well.

As confirmed in the microcomputer survey, both management and the general user have become more receptive to the computer as an office automation tool. Management, of course, is attracted by the potential for dollar and personnel savings. Users are losing their fear of the computer through contact with "friendly" microcomputer systems. These experiences are expected to aid in reducing the trauma of migrating from a manual environment to that of the FLIPS automated office.

The diversity of makes and models of microcomputers found in the Forest Service may not be as large a management concern as one would think. Of the 25 different models depicted in the survey, three of them constituted 70 percent of the total. These are the Apple, Osborne, and Kaypro. Users of these three have been able to effect a considerable amount of software interchange and have established a number of local pseudo-standards.

Usage patterns indicate that some degree of local (Regional Level) management of microcomputer procurements has occurred. In only one instance was this a conscious decision by management. This is the acquisition of portable microcomputers as terminal replacements in one Region. The concentrations of Apples in two other Regions may be attributed to the fact that the Apple was the first widely available personal computer and still has the largest number of commercial software packages marketed for it. Application software availability has also influenced Apple procurements. Software for computer-aided fire dispatch is one example of this. The popularity of Apples among State forestry organizations has led to the Forest Service acquiring a number of them for technology transfer use.

The presence of relatively large numbers of specific models does not imply that these have been found to be the ones best suited to Forest Service use. It rather reflects the first two widespread waves of personal computer popularity - the Apple era and the portable era. We, along with everyone else, are now experiencing the IBM phenomenon. Consequently, most new requirements are for either the IBM PC or a clone. We anticipate that as new machines experience surges of popularity, a clamor for these will be inevitable.

The difficulties hindering exchange of software are not unique to applications developed through machine-dependent programming languages. This also affects applications which are based upon commercial software such as a spreadsheet. There are so many different ones installed that little sharing of the applications developed for them is possible. The use of a multiplicity of commercial packages within a given application category also increases training needs, since one cannot, for instance, learn XCALC and then go to another installation employing ZCALC and be effective without first undergoing ZCALC training.

Most users consider the micro to be an effective office automation device and it is certainly promoted as such. When we look more closely however, we see that the office automation areas in which these single-user machines are fully effective are but two in number. These are the operation of local data bases for planning, scheduling, and budgeting purposes and the preparation of draft correspondence. Users have not made the investments needed to fully outfit a microcomputer for more all-around office automation use. Letter quality printers and plotters/graphics printers for business graphics have been acquired in relatively small numbers. Very little electronic mail activity has occurred, possibly because of a lack of compatibility between machines and since relatively expensive networking and hard disk storage must be acquired to make it operationally effective. Many of the respondents to the microcomputer user survey intend to move their micro-based office automation applications to FLIPS. This may have influenced decisions on how fully office automation would be implemented on micros.

Many microcomputers included in the study are used for communications with mainframes and portable micros are highly advocated for use as terminal replacements because of the capabilities which they possess which are not available on terminals, even those more expensive than the micro. Most respondents have had good success in communicating with Departmental computer centers in an asynchronous mode, but little has been done with synchronous communications. The latter has perhaps been hampered by lack of a standard protocol for micro-to-mainframe use. We anticipate that if the Department task force for micro-to-mainframe communications is successful, an interface standard will be established. The Forest Service standard for communications will be XODIAC X.25. All microcomputers acquired in the future will be required to support this standard.

Microcomputer hardware/software problems, though not nonexistent, have been experienced by a relatively small number of Forest Service users. Maintenance, when needed, has been responsive and effective. Although little formal training has been provided by vendors, most users have had little difficulty in reaching an acceptable level of competency in a relatively short period of time. Little attention has been paid to security, except for physical security of portables. The single-user nature of the equipment lends itself to data security.



To better utilize microcomputer technology to support Forest Service programs, it is recommended that management consider implementation of the following measures:

Hardware - The present multi-vendor microcomputer environment is not conducive to managing them in any meaningful manner. A minimum standard hardware requirement for Forest Service micros should be established and a single model adopted as the only acceptable one for future acquisitions. This model should be chosen for its ability to be integrated into the FLIPS network, as well. Concurrently, the use of micros as FLIPS workstations should be explored as a means of extending the FLIPS resource. Emulators are available which enable a micro to operate as if it were a FLIPS terminal.

Software - Encourage interchange of applications developed for commercial software packages by adopting specific ones as Forest Service standards, particularly in the case of spreadsheet and data base management. These packages should be selected to be compatible with the information architecture standards of FLIPS.

Communications - The Forest Service standard for communications will be XODIAC X.25. All microcomputers acquired in the future will be required to support this standard.

Procurement - Investigate the feasibility of awarding a requirements contract for portable microcomputers for terminal usage.

Acquisition Policy - FLIPS and Departmental computer centers must be reaffirmed as the primary sources of computing for the Forest Service. Policy should be established which supports the integration into FLIPS of microcomputers which are compatible with its information architecture standards.

Further policy is required to establish firm guidelines governing the class or classes of applications for which microcomputers may be acquired. Portability and dedicated use in a laboratory environment are recommended for inclusion in this list. Consideration should also be given to reducing current barriers to microcomputer acquisition.

### III. MICROCOMPUTER USER SURVEY

This portion of the study summarizes responses to a 15-part microcomputer user survey. Inferences or observations have been developed for each area based upon survey responses. Follow-up conversations with respondents and analyses of needs cited in procurement proposals have been used to provide additional information in some areas.

#### A. Equipment

This section identifies the microcomputers employed by respondents to the survey, and includes characteristics of major system components.

<u>1. Manufacturer and Model</u>	<u>Responses</u>
<u>ALTOS Computer Systems</u>	
ACS 8600-12	1
ACS 8000-12	1
<u>APPLE Computer Systems</u>	
APPLE II	87
APPLE III	3
<u>Cromenco</u>	
3A	1
Z-2H	1
<u>Hewlett Packard</u>	
HP 85	7
HP 87A	2
HP 125	1
<u>International Business Machines</u>	
Personal Computer	17
<u>Intertec</u>	
Superbrain	1
<u>Jonos</u>	
Courier	2
<u>Non-Linear Systems Inc</u>	
Kay Comp II	27
<u>Northstar</u>	
Advantage	5
Horizon	1
11	6
<u>Osborne Computer Corp.</u>	
Osborne I	24



<u>Manufacturer and Model</u>	<u>Responses</u>
<u>Otrona</u>	
Attache	1
<u>Radio Shack</u>	
TRS 80-2	2
TRS 80-100	1
<u>Teleram</u>	
3000	1
<u>Televideo Systems Inc.</u>	
TS 802	4
<u>Vector Graphics Inc.</u>	
4/30	1
3005	1
<u>Xerox Corporation</u>	
820	<u>2</u>
Total Number of Systems	200

#### Processor

a. Memory size (KB)	$\frac{32}{8}$	$\frac{48}{17}$	$\frac{64}{153}$	$\frac{128}{11}$	$\frac{192}{2}$	$\frac{256}{7}$	$\frac{512}{1}$	$\frac{576}{1}$
b. Portable	$\frac{Y}{55}$	$\frac{N}{145}$						

#### Storage

a. Floppy Drives	$\frac{0}{5}$	$\frac{1}{12}$	$\frac{2}{179}$	$\frac{3+}{4}$					
b. Floppy Capacity (KB)	$\frac{1-110}{0}$	$\frac{101-200}{8}$	$\frac{201-300}{67}$	$\frac{301-400}{66}$	$\frac{401-600}{25}$	$\frac{600-800}{22}$	$\frac{801-1000}{2}$	$\frac{1000}{5}$	
c. Hard Drives	$\frac{0}{184}$	$\frac{1}{16}$							
d. Hard Drive Cap (KB)	$\frac{5}{4}$	$\frac{8}{1}$	$\frac{10}{4}$	$\frac{11-12}{4}$	$\frac{20}{2}$	$\frac{40}{1}$			

#### Printers

a. Matrix Printer	$\frac{Y}{160}$	$\frac{N}{40}$
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b. Matrix Printer Speed (CPS)	$\frac{30}{1}$	$\frac{40}{13}$	$\frac{50}{1}$	$\frac{60}{2}$	$\frac{80}{60}$	$\frac{100}{5}$	$\frac{120}{53}$	$\frac{150}{2}$	$\frac{160}{3}$	$\frac{180}{18}$	$\frac{200}{2}$
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c. Letter Quality Printer	$\frac{Y}{20}$	$\frac{N}{180}$
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d. Letter Quality Speed (CPS)	$\frac{30}{3}$	$\frac{35}{1}$	$\frac{40}{3}$	$\frac{45}{7}$	$\frac{50}{1}$	$\frac{55}{5}$
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## 5. Other Devices

a. Plotter	$\frac{Y}{17}$	$\frac{N}{183}$
------------	----------------	-----------------

b. Plotter Speed (IPS)	$\frac{40}{4}$	$\frac{10}{3}$	$\frac{15}{10}$
------------------------	----------------	----------------	-----------------

c. Pens for Plotter	$\frac{1}{5}$	$\frac{2}{6}$	$\frac{3}{1}$	$\frac{6}{2}$	$\frac{8}{3}$
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d. Monitor	$\frac{\text{Mono}}{185}$	$\frac{\text{Color}}{10}$	$\frac{\text{Both}}{5}$
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e. Modem	$\frac{Y}{124}$	$\frac{N}{76}$
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f. Modem Speed (BPS)	$\frac{300}{74}$	$\frac{1200}{46}$	$\frac{4800}{4}$
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## 6. Observations:

Considering that there are an estimated 300 manufacturers of micro-computers, and that the Forest Service has acquired the offerings of but 16 of them, standardization has occurred to a far greater degree than was anticipated. The three most popular manufacturers were Apple with 90 systems or 45 percent of the survey, Osborne with 24 systems or 12 percent, and Non-linear with 27 systems or 13.5 percent. Other information received through the study indicates that technology transfer is a key reason for the degree of standardization that has occurred. From the survey it can be determined that the average configuration is as follows:

<u>Feature</u>	<u>Size</u>	<u>Remarks</u>
Portability	No	55 of 200 are portable
Memory Size	64K	
Storage	2 floppy drives, 200-400 KB	
Printer	80 or 120 Matrix CPS	
Monitor	Mono	
Modem	300 or 1200 Baud	

The largest microcomputer reported was an Altos model 8600-12 which will support up to eight workstations. The smallest microcomputer reported was the TRS-80 Model 100. The Pacific Southwestern Region (Region 5) reported the greatest number of microcomputers with 36. See Appendix B-1 for the organizational distribution of microcomputers.



## B. Proprietary Software

This section identifies the proprietary software being used by the respondents. The first table groups proprietary software packages by functional category and shows total packages by category and the number of unique packages in each category.

The remaining tables list the proprietary software in each functional category, and indicate the number of respondents having each package. Some software appears in more than one functional category, according to the respondents' indicated use(s).

<u>Functional Category</u>	<u>Total Responses</u>	<u>Unique Packages</u>
Communications	94	24
Data Entry/Edit	23	14
Data Base Management	70	18
Graphics	40	18
Operating Systems	164	13
Spreadsheet	121	9
Statistical Analysis	32	16
Word Processing	116	21
Other	40	21

### Communications

<u>Software Title</u>	<u>Responses</u>
ACCESS III	1
AMCALL	5
APPLE Personal Communications	3
ASCII Express	10
COM	1
Communications for Micros	1
Cross Talk	21
Data Capture	2
Hayes Comm Pkg	2
HP Data Comm	1
IBM Async	1
Lync	3
Mail Merge	6
Micro Link	8

Communications (Cont'd)

<u>Software Title</u>	<u>Responses</u>
Micro Modem II	2
Micro Term	1
OTERM	2
OTRONA Comms	1
Softterm	2
Southern Corp	1
TERM II	15
TRS 80 Comms	1
UNET	1
VISITERM	3

Data Entry/Edit

APPLE EDITOR	1
AUTO ANALYZER	1
Cromenco Screen Editor	1
Cromenco Text Editor	1
Data Lab Mgt	1
Data Star	5
Load Calc	1
Merge Calc	1
OTRONA Editor	1
Personal Editor	1
Professional Editor	1
Screen Writer	1
VEDIT	6
VISICALC	1

DBMS

ACE Report Writer	1
Data Factory	1
Data Master	1
Data Star	2
DBASE II	19
DB Master	12
HP Info Mgt	1
Informix	1
Lotus 1-2-3	6
Mini Factory	1
Personal Filing system	3
Personal Pearl	3
Quick File	1
Report Star	3
Super File	1
Super File Cabinet	2
The Incredible Jack	1
VISIFILE	11

### Graphics

<u>Software Title</u>	<u>Responses</u>
Apple Business Graphics	1
Apple III Business Graphics	1
Apple Graphics	3
Apple Plot	6
D Graph	1
Executive Briefing	1
Graphics Presentations	2
Hi Res Graphics	1
HP Series 100	1
Lotus 1-2-3	1
Pad Plot	1
PFS Graphics	1
SDI Graphics	1
Strip Character	1
Strobe Graphics	2
Versa Plot	1
VISITREND/PLOT	14
Zoom Graphics	1

### Operating Systems

APPLE DOS	42
APPLE PASCAL	11
CDOS	2
CP/M	82
CROMIX	2
Graphics CP/M	3
HP BASIC	1
MP/M	1
PASCAL OS	1
PC DOS	15
SOS	2
TRS DOS	1
XENIX	1

### Spreadsheet

LOTUS 1-2-3	8
Micro Plan	1
Multi Plan	6
Perfect Calc	6
Profit Plan	17
Scratch Pad	3
Super Calc	27
VISICALC	50
Worksheet Wizard	3



### Statistical Analysis

<u>Software Title</u>	<u>Responses</u>
Easy Planner	1
Forecaster II	1
HP General Statistics	5
Matrix Inversion	1
Micro Stat	1
Multilinear Reg	1
Multiple Reg Anal	2
NOVA	1
OTRONA Statistics	1
Radio Shack Stat Pkg	1
Regression I & II	1
SPS	5
Statistical Analysis	1
Stat Pro	3
Stats Plus	1
VISITREND/PLOT	6

### Word Processing

ALTOS Exec WP	2
Applewriter II	13
Applewriter III	1
Easy Writer	3
Exec Secretary	2
HP Series 100	1
HP Text Edit	2
Magic Wand	1
OTRONA WP	1
Perfect Writer	7
Screen Writer	2
SELECT	19
Sensible Speller	1
Spell Binder	2
Spell Guard	2
TEXT 85	1
VEDIT	1
Word Star	50
Word Master	1
Word Wizard	3
Write Master	1

### Other

ABS Business Shell	1
APP GEN	1
Apple Mechanic	1
Apple Tutorial	1
Diagnostics II	6
Disc Doctor	1
DOS Tool Kit	1
HP Survey Pkg	1
Mail Merge	3
Master Diagnostics	1
Meta File	1
Mile Stone	1
Profit Plan	1
Quick Code	1
Super Sort	1
Tax Preparer	1
TEACH/INSTALL	8
Time Manager	1
Topographic Mapping	1
VISISCCHEDULE	2
VISIDEX	5

### Observations

Every respondent indicated extensive use of commercial software. In some cases, systems are dedicated to applications involving one or two pieces of commercial software, generally spreadsheet and word processing. The variety of packages in use indicates little agreement among the respondents on a "best" item of software for a particular application area. VISICALC and WORDSTAR may be exceptions, since some 50 respondents are employing these packages for spreadsheet and word processing, respectively.

## C. USE

In this section, respondents first ranked their use of four categories of proprietary software according to frequency of use. They then identified their frequency of use of specific application areas.

### 1. Usage Ranking (1=highest 4=lowest)

<u>Package</u>	<u>1</u>	<u>2</u>	<u>Ranking</u> <u>3</u>	<u>4</u>	<u>No Response</u>
Spreadsheet	69	49	33	11	38
Data base	42	52	41	25	40
Electronic mail	14	22	45	81	38
Word Processing	38	36	45	42	39

### 2. Application Area Use

<u>Application Area</u> <u>Percent of Use</u>	<u>No. of Responses by Percent of Use</u>				
	(1-20)	(21-40)	(41-60)	(61-80)	(81-100)
Planning, Budgeting & Scheduling	29	21	14	9	11
Distributed Processing Environment					
Training	10	4	4	3	
Computer Aided Dispatch	2	1	1	2	15
Arson Surveillance	1				
Log Scaling	1				6
Aircraft Flight Planning		1	1		
Fuels Inventory	3				
Fire Prediction Models	1				
Laboratory Instrumentation	3				
Timber Cruises	2	1			
Data Collection from Data Loggers	3	1	1		
Process Control	2				
Contract Logs	2				
Proposal Analysis	1				
Vendor Listings		1			
Auditing					2
Survey Calcs					1
Timber Costs			2		
Nursery Management	1				

#### Observations:

The responses indicate that the most frequently used proprietary packages are spreadsheets and data base systems. Word processing and electronic mail are somewhat lesser used. Of the 163 responses to this section, 35 of them were 80 percent or more dedicated to a single application area. Computer Aided Dispatch with 15 and Planning, Budgeting, and Scheduling with 11 were the two application areas with the highest degree of dedicated use. The single largest reported use of microcomputers was for planning, budgeting, and scheduling. A number of additional responses were received to the application area use question, but these were not tallied as they could not be identified with a specific application area. These included ones involving graphics, reports, statistical analysis, etc.



#### D. SOFTWARE

The intent of questions in this section was to assist in determining the adaptability of commercial software packages to the Forest Service environment.

1. How adaptable are commercial packages for this micro to Forest Service applications?

Survey Responses: 107 Highly 49 Moderate 14 Marginally 30 No Response

See Appendix C SO-1 for comments on this question.

2. How effective has vendor assistance been in trouble-shooting, maintenance, etc.?

Survey Responses: 48 Highly 47 Moderate 47 Marginally  
58 Not observed

See Appendix C SO-2 for comments on this question.

3. Are some applications such as data base systems and forms-fill on this micro more sensitive to incompatibility? For example, have you encountered problems extracting data from a data base to use in a spreadsheet or graphic system?

Survey Responses: 39 Yes 103 No 58 No Response

See Appendix C SO-3 for comments on this question.

4. Did you have any software installation problems?

Survey Responses: 20 Yes 155 No 25 No Response

See Appendix C SO-5 for comments on this question.

5. Has any software been developed locally?

Survey Responses: 76 Yes 103 No 21 No Response

Applications Developed Locally:

- Linkage Program to set up print size on printer
- Programs to manipulate data before and after communication with FCCC
- Shell scripts programs
- Scale frequency calculations
- Weighted average calculations

- Reduce profiles
- Fire reporting
- Timber appraisals
- Project level economic analysis
- Program level economic analysis
- Fleet analysis
- B&F functions
- Hydrological analysis
- Personnel Management Planning
- Desk scaling and cull logs
- Road costs
- Fire Dispatch
- Personnel ordering program
- Log scaling vehicle information tracking system
- Forest safety programs
- Law enforcement summary
- Fire status summary
- Radio summary inventory
- Form file and utilities
- Payscale
- Economic analysis for wood fired boilers
- Training and time scheduling
- Pilot currency
- Aircraft reports
- Campground reservations
- Nursery inventory
- Aviation and Fire message system
- Road inventory
- Road design
- Salary
- Unpaid bills
- FES 900 data entry
- Soil prescriptions
- Statistics
- Modeling
- Fire behavior calculations
- Raws weather storage and edit
- Statistical processing systems
- Database managers file manipulation routines
- Watershed control program
- Christmas tree disease management program
- Data collection software
- Tree growth projection System
- Tree list
- Cuff records tracking system for project leaders
- Mailing labels
- AD-729 management code reporting

- Forestry investment analysis
- Lab data calculation and transformation
- Auto analyzer
- Total Biomass cruise program
- Formulas data entry
- Laboratory real time data acquisition
- Software development utilities
- Recreation budget system
- Regional graphic display
- Budget history display
- Title page
- SAW
- EVALUE
- SET
- Investment analysis
- Timber rotation simulator
- Spark arrestor

#### Observations:

The most general response received was that commercial software packages were adaptable to the Forest Service environment and that relatively few installation problems had occurred. Most responders did not experience incompatibility between software packages. However, several problem areas were identified in the comments. Vendor assistance on software problems appears to be adequate in those cases where it was needed. Considering the length of time the Forest Service has been using microcomputers, the number of microcomputers in use, and variety of microcomputers, there has been a relatively minor amount of local software development. Much of the development which has occurred has been through use of spreadsheet and/or data base management proprietary software, rather than programming languages.



## E. HARDWARE

The questions in this section were used to collect information on how well the hardware functioned after installation.

### 1. How reliable are the hardware components of this micro?

Survey Responses: 108 Very Reliable 56 Acceptable 14 Poor  
22 No Response

See Appendix C HA-1 for comments on this question.

### 2. How responsive is servicing of this micro?

Survey Responses: 48 Very Reliable 64 Acceptable 14 Poor  
21 No Response 53 Not observed.

See Appendix C HA-2 for comments on this question.

### 3. How available are supplies for this micro such as printer ribbons, paper, discs, etc.?

Survey Responses: 127 Readily 41 Good 7 Long Wait 25 No Response

See Appendix C HA-3 for comments on this question.

### 4. Were there any installation problems?

Survey Responses: 45 Yes 134 No 21 No Response

See Appendix C HA-4 for comments on this question.

### 5. Should equipment acceptance standards be developed for future procurements?

Survey Responses: 70 Yes 68 No 62 No Response

See Appendix C HA-5 for comments on this question.

### 6. What is a reasonable warranty period on components?

Survey Responses: 0 30 days 21 60 days 11 90 days 69 6 mos 70 12 mos  
3 Longer 26 No Response

See Appendix C HA-6 for comments on this question.

7. Were problems encountered in interfacing devices from other vendors, such as plotters and printers?

Survey Responses: 37 Yes 142 No 21 No Response

See Appendix C HA-7 for comments on this question.

8. Would you buy another micro like this one?

Survey Responses: 136 Yes 41 No 23 No Response

See Appendix C HA-8 for comments on this question.

#### Observations:

Microcomputer components appear to be quite reliable. Six of the fourteen negative responses to the reliability question can be attributed to the environment in which these units are being operated. This is on a mill deck, with its attendant problems involving dust and weather conditions.

Service response is acceptable or better in most cases. Obtaining service from a source other than the hardware vendor has not adversely affected response to service calls.

Obtaining supplies has not been a significant problem. Difficulties in this respect appear to have their origin in internal procurement procedures, rather than with vendors.

Little agreement exists on the need for equipment acceptance standards. However, many respondents favored warranty periods of 6 or 12 months. Comments on this question disclose that the desire for extended warranties is an outgrowth of problems associated with a multi-vendor environment, i.e., some components could not be tested within their warranty period because others were not delivered within that time frame.

## F. OPERATING SYSTEM AND PROGRAMMING LANGUAGES

This section sought information on capabilities and uses of microcomputer programming languages and operating systems.

1. How user-oriented are this micro's operating systems?

Survey Responses: 54 Excellent 103 Adequate 18 Poor  
25 No Response

See Appendix C OP-1 for comments on this question.

2. Is it desirable to institute a standard operating system, e.g., UNIX, CP/M, IBM DOS, etc.?

Survey Responses: 98 Yes 69 No 33 No Response

See Appendix C OP-2 for comments on this question.

3. Should only those operating systems that meet the standards be allowed?

Survey Responses: 69 Yes 83 No 48 No Response

See Appendix C OP-3 for comments on this question.

4. Are this micro's programming languages easy to use?

Survey Responses: 146 Yes 11 No 2 Mixed 41 No Response

See Appendix C OP-4 for comments on this question.

5. Are this micro's programming languages sufficiently powerful?

Survey Responses: 142 Yes 15 No 1 Mixed 42 No Response

See Appendix C OP-5 for comments on this question.

6. Should standards be imposed for programming languages?

Survey Responses: 91 Yes 71 No 38 No Response

See Appendix C OP-6 for comments on this question.

7. Which programming languages are the most commonly used?

Survey Responses:

<u>Language</u>	<u>Number of Systems by Percent of use</u>				
	(1-20)	(21-40)	(41-60)	(61-80)	(81-100)
BASIC	<u>5</u>	<u>4</u>	<u>10</u>	<u>12</u>	<u>108</u>
FORTRAN	<u>11</u>	<u>8</u>	<u>3</u>		<u>1</u>
COBOL	<u>2</u>	<u>1</u>		<u>1</u>	
MACRO	<u>3</u>				
ASSEMBLER	<u>2</u>				<u>2</u>
PASCAL	<u>10</u>	<u>4</u>	<u>3</u>		<u>4</u>
FORTH	<u>2</u>				
C	<u>1</u>				
PLI	<u>1</u>				

Observations:

Most responses indicated satisfaction with both the operating systems and the programming languages employed on micros. Sentiment somewhat favors establishing standards for programming languages and instituting a standard operating system. Restricting usage to a standard operating system is not advocated, however.

BASIC is by far the most commonly used programming language, with FORTRAN and PASCAL being the only other ones with significant employment.



## G. OFFICE AUTOMATION

This section addresses how microcomputers are or could be used for office automation functions.

1. How do you use this microcomputer as an office automation tool?

Summary of significant comments:

<u>No.</u>	<u>Comment</u>
<u>74</u>	<u>Word Processing</u>
<u>22</u>	<u>Spreadsheets</u>
<u>19</u>	<u>Electronic Mail</u>
<u>5</u>	<u>Management Training</u>
<u>11</u>	<u>Electronic Filing</u>
<u>17</u>	<u>Planning, Scheduling and Budgeting</u>
<u>7</u>	<u>Graphics</u>
<u>4</u>	<u>Computer Aided Dispatch</u>
<u>6</u>	<u>Data Entry</u>
<u>6</u>	<u>Log Scaling Calculation</u>
<u>1</u>	<u>Systems Development</u>
<u>10</u>	<u>Local Data Base</u>

2. What other office automation functions could the microcomputer effectively perform?

The comments on this question identify the same application areas as those in question No. 1. The specific comments on this question can be reviewed in Appendix C OA-2.

3. Does this microcomputer serve as an effective word processing device?

Survey Responses: 122 Yes 34 No 44 No Response

See Appendix C AO-3 for comments on this question.

### Observations:

Responses to this question indicate both that a microcomputer is effective as a word processing device and that the term "office automation" is not well defined. Of the 12 different responses to the first question, only word processing; electronic mail; planning, budgeting and scheduling; and electronic filing; are generally thought of as office automation applications.

## H. LAB AUTOMATION

Some of the microcomputers acquired were targeted for lab automation projects. Therefore, it is the intent of the following questions to collect information on the effectiveness of this use of microcomputers.

1. What lab automation functions have been successfully performed by this microcomputer?

Summary of significant comments:

<u>No.</u>	<u>Comment</u>
<u>1</u>	<u>Accumulating and transmitting data from dendrology meter</u>
<u>2</u>	<u>Data retrieval from digitizer.</u>
<u>1</u>	<u>Replaces reading a script chart. Generates reports.</u>
<u>1</u>	<u>Automated lab calculation of soil, plant, forest floor and water analysis.</u>
<u>1</u>	<u>Direct entry of enzyme analysis data and mathematical and statistical calculations.</u>
<u>1</u>	<u>Interface to digital recorder</u>
<u>1</u>	<u>Process control, robotics, image analysis</u>
<u>1</u>	<u>Real time data acquisition on destructive tests</u>
<u>1</u>	<u>Real time data acquisition using load cells &amp; LVDTs</u>

2. Have problems been encountered in using this microcomputer as a process control computer?

Summary of significant comments:

<u>No.</u>	<u>Comment</u>
<u>1</u>	<u>None after the system was understood by operator</u>

### Observations:

Although few responses were received to this section, all were positive. The microcomputer appears to be an effective lab automation tool.

## I. COMMUNICATIONS

The questions in this section were directed to the collection of information on the communications capabilities of microcomputers.

1. How well does this micro communicate with mainframes and other microcomputers?

Survey Responses: 49 Excellent 66 Very Good 16 Poorly  
48 Haven't tried 21 No Response

See Appendix C COMM-1 for comments on this question.

2. Are communications protocol or interface standards desirable?

Survey Responses 118 Yes 29 No 53 No Response

See Appendix C COMM-2 for comments on this question.

3. Is it desirable to require microcomputers to be able to send and receive data from Departmental computer centers

Survey Responses 109 Yes 52 No 39 No Response

See Appendix C COMM-3 for comments on this question.

4. How well does this microcomputer function in a synchronous environment?

Survey Responses: 1 Excellent 5 Very Good 1 Poorly 172 Haven't  
tried 21 No Response

See Appendix C COMM-4 for comments on this question.

5. What protocols have been tested?

Survey Responses:

<u>Protocol</u>	<u>No. of tests</u>
TTY	30
2780	1
U1004	1
X.25	3

See Appendix C COMM-5 for comments on this question.

6. How well does this micro function in an asynchronous environment?

Survey Responses:    48 Excellent    66 Very Good    8 Poor  
                         52 Haven't tried    26 No Response

See Appendix C COMM-6 for comments on this question.

7. What speeds are used for synchronous/asynchronous communications?

Survey Responses:   74 (300 BPS)   63 (1200 BPS)   1 (2400 BPS)   0 (4800 BPS)  
                         6 (9600 BPS)

See Appendix C COMM-7 for comments on this question.

Observations:

About two-thirds of the respondents have tested communications with mainframes or with other microcomputers. Asynchronous transmissions have been quite good, but synchronous tests have been too limited to make a judgment upon its use. The capability to communicate with Departmental computer centers and the establishment of communication protocol standards were advocated in most responses.

## J. DOCUMENTATION AND TRAINING

This section is intended to gain insight into the training needed for use of microcomputers.

1. Are vendor-supplied manuals comprehensive and clearly written?

Survey Responses: 125 Yes 33 No 18 Mixed 24 No Response

(The "Mixed" response indicates that some manuals were found to be comprehensive and clearly written, while others were not.)

See Appendix C DOC-1 for comments on this question.

2. How much training did the unsophisticated user require to comfortably interact with the micro?

Survey Responses: 82 1-day 13 2-3 days 22 1 week 12 2-3 weeks  
14 Excessive 11 Varies 46 No Response

(The "Varies" response indicates that it depends upon the particular user and application.)

See Appendix C DOC-2 for comments on this question.

3. How much training did the vendor provide with installation?

Survey Responses: 139 None 4 2 hours 1 1/2 day 2 2 Classes  
54 No Response

See Appendix C DOC-2 for comments on this question.

### Observations:

Nearly all the training was accomplished within 1 to 3 days by reading the manuals and working with the microcomputer. Vendors supplied very little training. The majority of the users felt vendors supplied manuals which were comprehensive and well written.



## K. MANAGEMENT REACTION

This section sought perceptions from Forest Service management on the employment of microcomputer technology.

1. What positive results have been perceived by management from the employment of this micro?

Synopsis of meaningful comments:

<u>No.</u>	<u>Comments</u>
29	Time savings
14	Improved computer literacy
20	Increased productivity
14	Saves money
2	More efficient and effective operations
2	Improved communications
6	Organization & availability/access of data has improved
3	Management is more comfortable about making changes.
1	Management amazed at capacity.
1	Opportunity to handle greater complexity.
7	Many managers now want their own
2	Renewed interest in work
2	More professional displays

2. What quantifiable increases in unit productivity have occurred?

A great variety of responses was received to this question. Many estimated 20-30 percent or greater increases in staff or clerical productivity gains. See Appendix C MGT-2 for other comments on this question.

### Observations:

Survey responses indicate that microcomputers have been very effective in both the accomplishment of work objectives and in the improvement of computer literacy. Increased support for automation from those managers having been exposed to micros may be inferred from these sample comments :

"Professional use of word processor has freed administrative staff to assume additional program responsibilities. Spreadsheet software has made budget-tracking more efficient and effective."

"Graphics for reports and meeting presentations are produced in minutes rather than hours and days that it used to take."

"Management amazed at capacity, communications, and things it will do for you. Helped dispel myth that only clerk-types should use keyboard."

"Have become more aware of how they are an integral part of the automated office. More positive attitudes about FLIPS."

## L. CULTURAL ADAPTATION

This section examines the impact of microcomputers on the new user.

1. Has familiarity with the microcomputer changed attitudes within the unit towards automation?

Survey Results    142 Yes    26 No    32 No Response

Summary of significant comments:

<u>No.</u>	<u>Comments</u>
<u>10</u>	<u>Yes-Some of the ADP "Magic" has disappeared</u>
<u>39</u>	<u>Yes-Increased awareness and desire to use</u>
<u>6</u>	<u>Yes-They see that it saves time and money</u>
<u>1</u>	<u>No-Those interested found projects to use the computer</u> <u>Those not already interested haven't used it.</u>
<u>14</u>	<u>Yes-People are now looking forward to FLIPS</u>
<u>12</u>	<u>Yes-Helping in getting the work done has made it more</u> <u>acceptable.</u>
<u>11</u>	<u>No-People were already experienced computer users.</u>
<u>3</u>	<u>No-Not completely. Some improvement has been noticed.</u>

2. Describe any new methods of doing business which have evolved.

The responses to this question were too varied to develop any meaningful summary. See Appendix C CUL-2 for a summary of comments on new methods of doing business through application of microcomputer technology.

### Observations:

Microcomputer use can contribute much to one's perception of the role of computers in an office environment. Understanding of the Forest Level Information Processing System (FLIPS) concept should be improved now that all organizational levels have had some exposure to office automation.

## M. SECURITY

Opinions regarding microcomputer security requirements and measures taken to meet them were collected in this section.

1. Has use of this microcomputer posed any unique security problems?

Survey Responses    24 Yes    150 No    26 No Response

Summary of significant comments:

<u>No.</u>	<u>Comments</u>
<u>19</u>	<u>Yes-Physical security of portable microcomputers.</u>
<u>4</u>	<u>No-For better security user can walk away with</u>
	<u>his/her diskette/data.</u>
<u>1</u>	<u>Yes-Software theft and unauthorized use</u>
<u>5</u>	<u>No-Does not process sensitive data.</u>

2. Were any security measures tested and/or implemented?

Survey Responses    76 Yes    96 No    28 No Response

Summary of significant comments:

<u>No.</u>	<u>Comments</u>
<u>8</u>	<u>Yes-Data and system backup procedures implemented.</u>
<u>25</u>	<u>Yes-Locked in room cabinet or in a desk.</u>
<u>5</u>	<u>Yes-Password and access codes established and</u>
	<u>maintained.</u>

### Observations:

Although few respondents found that the microcomputer presented any unique security problems, a majority of them have instituted security measures. Ensuring physical security of the equipment, particularly if portable, was most often mentioned. Locking devices and restricted access areas are solutions most often advocated. Some use of password protection for data is being employed. However, data and software are more typically safeguarded by providing locking cabinets for storage of removable media.

## N. PROCUREMENT

This section, though addressing microcomputer procurement in general, received responses which relate primarily to the specific procurement of microcomputers for the study.

1. Is it advantageous to procure microcomputers from headquarters level to take advantage of volume pricing?

Survey Responses    55 Yes    113 No    32 No Response

Summary of significant comments:

<u>No.</u>	<u>Comments</u>
<u>23</u>	<u>No-Too slow. Delays outweigh price savings.</u>
<u>11</u>	<u>No-Need to configure to meet local needs.</u>
<u>23</u>	<u>No-Micro market is too subject to change. Best prices can be obtained through local dealers.</u>
<u>5</u>	<u>Yes-If those procured meet the standards and objectives of proposed use.</u>
<u>13</u>	<u>No-Need local vendor support.</u>

2. Would it be more advantageous to be in a position to negotiate with local vendors?

Survey Responses    150 Yes    18 No    32 No Response

Summary of significant comments:

<u>No.</u>	<u>Comments</u>
<u>17</u>	<u>Yes-Better price</u>
<u>49</u>	<u>Yes-Better service</u>
<u>49</u>	<u>Yes-Better response time</u>
<u>6</u>	<u>Yes-Better training</u>

3. Should requirements-type contracts be negotiated for most popular brands or can a "best" system be defined?

Summary of significant comments

<u>No.</u>	<u>Comments</u>
<u>45</u>	<u>Yes-Requirements type for brand name</u>
<u>15</u>	<u>Yes-Define "best" system</u>
<u>30</u>	<u>Best system cannot be defined</u>
<u>17</u>	<u>No-User needs to select system best suited for their needs.</u>
<u>3</u>	<u>Best system should be defined.</u>
<u>6</u>	<u>No</u>

Observations:

Most of the comments regarding acquiring microcomputers from a national procurement were unfavorable. This may be because:

- It took 9 months from the time the contract was awarded until all components were received.
- Some software was defaulted and never procured.
- Components were received from different vendors and were not always compatible. Varying delivery times caused implementation problems and delays.
- Some felt they could have gotten a better price from a local vendor.
- Installation support was not as good as it would have been if the equipment had been purchased from a local vendor.



## O. RELATIONSHIP TO FLIPS

Responses to this section were sought to assist in determining evaluation of how micros could be used in distributive processing in conjunction with FLIPS facilities.

1. Are direct interfaces to FLIPS equipment foreseen?

Survey Responses    134 Yes    34 No    32 No Response

See Appendix C FL-1 for comments on this question.

2. Identify any applications that are now running on microprocessors or are planned for implementation on micros that should be transferred to FLIPS equipment when available.

<u>No.</u>	<u>Application</u>
<u>29</u>	<u>Spreadsheet</u>
<u>6</u>	<u>Electronic Mail</u>
<u>30</u>	<u>Word Processing</u>
<u>31</u>	<u>Local Data Bases</u>
<u>19</u>	<u>Data Entry Edit</u>
<u>2</u>	<u>Mailing Labels</u>
<u>1</u>	<u>Log Scale Cruise</u>
<u>1</u>	<u>Appraisal Budget</u>
<u>1</u>	<u>TSA Basic Data</u>
<u>1</u>	<u>Tearsheets</u>
<u>1</u>	<u>Frequency for Scale</u>
<u>3</u>	<u>Cost Share</u>
<u>1</u>	<u>Perspective Plots</u>
<u>1</u>	<u>Plotting</u>
<u>1</u>	<u>Traverse</u>

<u>No.</u>	<u>Application</u>
<u>2</u>	<u>Aircraft Use</u>
<u>2</u>	<u>Fire Reports</u>
<u>1</u>	<u>Flight Planning</u>
<u>1</u>	<u>Fire Weather</u>
<u>2</u>	<u>Attainment Reporting &amp; Analysis</u>
<u>2</u>	<u>Forest Program and Budget</u>
<u>8</u>	<u>Business Graphics</u>
<u>1</u>	<u>Red Card Program</u>
<u>1</u>	<u>Fire Statistics</u>
<u>2</u>	<u>LEMARS</u>
<u>1</u>	<u>Safety Program</u>
<u>1</u>	<u>Weather Indexes</u>

<u>1</u>	Fire Facts
<u>1</u>	Prescribed Fire Qualls
<u>1</u>	Internal Rate of Return
<u>1</u>	Payscales
<u>1</u>	Forms
<u>3</u>	Budget Formulation and Tracking
<u>1</u>	Obligation Files
<u>1</u>	Permanent Salary Budgeting
<u>1</u>	Budget Execution
<u>1</u>	Grants Management Data Base
<u>1</u>	Forestry Investment Analysis
<u>1</u>	Multi-Product Cruise Program
<u>1</u>	Process Automation
<u>1</u>	Lab Data Collection
<u>1</u>	Robotics
<u>1</u>	Image Analysis
<u>1</u>	Fiscal Applications
<u>1</u>	National Purchase Order System
<u>12</u>	None
<u>6</u>	All

#### Observations:

Responses to the interface question show that many Forest Service microcomputers may some day be interfaced to FLIPS equipment. Followup contacts indicate that the interface would be a telecommunications one and employed to transmit data to FLIPS which had been entered and edited on the micros.

It is significant to note the number of responses which propose moving spreadsheets, word processing, local data base and data entry, and edit applications to FLIPS. Since these are the most frequently cited need for micros, it could be inferred that the demand for microprocessing will diminish once FLIPS facilities become generally available.

## APPENDIX

# APPENDIX A

## MICROCOMPUTER STUDY

### SURVEY FORM

#### INFORMATION SOURCE

<u>Region/Area/Station</u>	<u>Forest/Lab</u>	<u>City and State where equipment is located</u>
<u>Name of Person Reporting</u>	<u>Telephone No. [ ] FTS [ ] Comm.</u>	<u>Date</u>

#### EQUIPMENT

##### Personal Computer

<u>Manufacturer</u>	<u>Model</u>	<u>Serial No.</u>	<u>Date Installed</u>
---------------------	--------------	-------------------	-----------------------

##### Operating Configuration

<u>Processor(s)</u>	<u>Memory Size</u>	<u>Portable (Y/N)</u>
---------------------	--------------------	-----------------------

##### Storage

<u>No. Floppy Drives</u>	<u>Manufacturer(s)</u>	<u>Total Capacity</u>
--------------------------	------------------------	-----------------------

<u>No. Hard Drives</u>	<u>Manufacturer(s)</u>	<u>Total Capacity</u>	<u>Back-up Device</u>
------------------------	------------------------	-----------------------	-----------------------

##### Matrix Printers

<u>Manufacturer</u>	<u>Model</u>	<u>Speed (CPS)</u>	<u>Carriage Size</u>
---------------------	--------------	--------------------	----------------------

<u>Manufacturer</u>	<u>Model</u>	<u>Speed (CPS)</u>	<u>Carriage Size</u>
---------------------	--------------	--------------------	----------------------

##### Daisy Wheel Printer

<u>Manufacturer</u>	<u>Model</u>	<u>Speed (CPS)</u>	<u>Carriage Size</u>
---------------------	--------------	--------------------	----------------------

##### Plotters

<u>Manufacturer</u>	<u>Model</u>	<u>Speed (IPS)</u>	<u>No. PENS</u>
---------------------	--------------	--------------------	-----------------

##### Monitors

<u>Manufacturer</u>	<u>Model</u>	<u>Mono/Color</u>
---------------------	--------------	-------------------

##### Modems

<u>Manufacturer</u>	<u>Model</u>	<u>Speeds (BPS)</u>
---------------------	--------------	---------------------

## PROPRIETARY SOFTWARE

List name, version, and author/vendor for each proprietary software package in use.

	<u>Package Name and Version</u>	<u>Author/Vendor</u>
<u>Communications</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Data Entry/Edit</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>DBMS</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Graphics</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Operating Systems</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Spread Sheet</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Statistical Analysis</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Word Processing</u>	<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<u>Other</u>	<hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/>



USE

Usage Ranking - Rank in order of frequency of use from 1 - highest to 4 - lowest.

Spreadsheets \_\_\_\_\_  
Data Base \_\_\_\_\_  
Electronic Mail \_\_\_\_\_  
Word Processing \_\_\_\_\_

Percent of Use - Estimate percent of use of micro computer in each application area

- % Planning, Budgeting, & Scheduling
- % Distributed Processing Environment Training
- % Computer Aided Manufacturing
- % Computer Aided Fire Dispatch
- % Arson Surveillance
- % Log Scaling
- % Technology Transfer
- % Research Support
- % Aircraft Flight Planning
- % Retardant Base Management
- % Fuels Inventory
- % Fire Prediction Models
- % Laboratory Instrumentation
- % Timber Cruises
- % Modeling
- % Data Entry/Edit
- % Statistical Analysis
- % Graphics
- % Data Transmission
- % Data Collection from Data Loggers
- % Process Control

## SOFTWARE

- How adaptable are commercial software packages for this micro to Forest Service applications? ☐ Highly ☐ Moderate ☐ Marginally

Comment: \_\_\_\_\_

- How effective has vendor assistance been in trouble-shooting, maintenance, etc.? ☐ Highly ☐ Moderate ☐ Marginally Comment: \_\_\_\_\_

- Are some applications such as data base systems and forms-fill on this micro more sensitive to incompatibility? For example, have you encountered problems extracting data from a data base to use in a spreadsheet or graphic system? ☐ Yes ☐ No Comment: \_\_\_\_\_

- Has any software been developed locally? List by application name(s):  
\_\_\_\_\_  
\_\_\_\_\_

- Did you have any software installation problems? ☐ Yes ☐ No If yes, explain. \_\_\_\_\_

## HARDWARE

- How reliable are the hardware components of this micro? ☐ Very reliable ☐ Acceptable ☐ Poor

Comment: \_\_\_\_\_

- How responsive is servicing of this micro? ☐ Very Reliable ☐ Acceptable ☐ Poor Comment: \_\_\_\_\_

- How available are supplies for this micro such as printer ribbons, paper, discs, etc.? ☐ Readily ☐ Good ☐ Long Wait Comment: \_\_\_\_\_

- Were there any installation problems? ☐ Yes ☐ No If yes, comment: \_\_\_\_\_

- Should equipment acceptance standards be developed for future procurements? ☐ Yes ☐ No Comment: \_\_\_\_\_

- What is a reasonable warranty period on components? ☐ 30 days ☐ 60 Days  
☐ 6 mos ☐ 12 mos ☐ Longer Comment: \_\_\_\_\_

- Were problems encountered in interfacing devices from other vendors, such as  
 plotters and printers? ☐ Yes ☐ No If yes, state problem \_\_\_\_\_

- Would you buy another micro like this one? ☐ Yes ☐ No Why? \_\_\_\_\_

#### OPERATING SYSTEM AND PROGRAMMING LANGUAGES

- How user-oriented are this micro's operating systems? ☐ Exc. ☐ Adequate  
☐ Poor Comment: \_\_\_\_\_

- Is it desirable to institute a standard operating system, e.g., UNIX, CP/M, IBM  
 DOS, etc.? ☐ Yes ☐ No Why: \_\_\_\_\_

- Should only those operating systems that meet the standards be allowed? ☐ Yes  
☐ No Comment: \_\_\_\_\_

- Are this micro's programming languages easy to use? ☐ Yes ☐ No  
 Comment: \_\_\_\_\_

- Are this micro's programming languages sufficiently powerful? ☐ Yes ☐ No  
 Comment: \_\_\_\_\_

- Should standards be imposed for programming languages? ☐ Yes ☐ No  
 Comment: \_\_\_\_\_

- Which programming language are the most commonly  
 used?

	<u>Version</u>	<u>Vendor</u>	<u>% Use</u>
BASIC	_____	_____	____%
FORTRAN	_____	_____	____%
COBOL	_____	_____	____%
MACRO	_____	_____	____%
ASSEMBLER	_____	_____	____%
ALGOL	_____	_____	____%
_____	_____	_____	____%
_____	_____	_____	____%
_____	_____	_____	____%
_____	_____	_____	____%

### OFFICE AUTOMATION

- How do you use this microcomputer as an office automation tool? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- What other office automation functions could the microcomputer effectively perform? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Does this microcomputer serve as an effective word processing device? ☐ Yes  
☐ No      Comment: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### LAB AUTOMATION

- What Lab automation functions have been successfully performed by this microcomputer? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Have problems been encountered in using this microcomputer as a process control computer? \_\_\_\_\_  
\_\_\_\_\_

### COMMUNICATIONS

- How well does this micro communicate with mainframes and other microcomputers?  
☐ Exc. ☐ Very Good ☐ Poor ☐ Haven't tried  
Comment: \_\_\_\_\_  
\_\_\_\_\_
- Are communications protocol or interface standards desirable? ☐ Yes ☐ No  
Why? \_\_\_\_\_  
\_\_\_\_\_
- Is it desirable to require microcomputers to be able to send and receive data from Departmental computer centers? ☐ Yes ☐ No  
Why? \_\_\_\_\_  
\_\_\_\_\_
- How well does this microcomputer function in a synchronous environment?  
☐ Exc ☐ Very Good ☐ Poorly ☐ Haven't tried  
Comment: \_\_\_\_\_  
\_\_\_\_\_

- What protocols have been tested? \_\_\_\_\_
- How well does this micro function in an asynchronous environment? ☐ Exc.  
☐ Very Good ☐ Poor ☐ Haven't tried  
Comment: \_\_\_\_\_
- What speeds are used for synchronous/asynchronous communications?  
0-300 ☐ 1200 ☐ 2400 ☐ 4800 ☐ 9600+ ☐

#### DOCUMENTATION AND TRAINING

- Are vendor-supplied manuals comprehensive and clearly written? ☐ Yes ☐ No  
\_\_\_\_\_
- How much training did the unsophisticated user require to comfortably interact with the micro? \_\_\_\_\_
- How much training did the vendor provide with installation? \_\_\_\_\_

#### MANAGEMENT REACTION

- What positive results have been perceived by management from the employment of this micro? \_\_\_\_\_
- What quantifiable increases in unit productivity have occurred? \_\_\_\_\_

#### CULTURAL ADAPTATION

- Has familiarity with the microcomputer changed attitudes within the unit towards automation? ☐ Yes ☐ No Describe \_\_\_\_\_
- Describe any new methods of doing business which have evolved. \_\_\_\_\_



### SECURITY

- Has use of this microcomputer posed any unique security problems? ☐ Yes  
☐ No \_\_\_\_\_

- Were any security measures tested and/or implemented? ☐ Yes ☐ No  
\_\_\_\_\_  
\_\_\_\_\_

### PROCUREMENT

- Is it advantageous to procure microcomputers from headquarters level to take advantage of volume pricing? ☐ Yes ☐ No  
\_\_\_\_\_  
\_\_\_\_\_
- Would it be more advantageous to be in a position to negotiate with local vendors?  
☐ Yes ☐ No \_\_\_\_\_
- Should requirements-type contracts be negotiated for most popular brands or can a "best" system be defined? \_\_\_\_\_  
\_\_\_\_\_

### RELATIONSHIP TO FLIPS

- Are direct interfaces to FLIPS equipment foreseen? ☐ Yes ☐ No  
\_\_\_\_\_  
\_\_\_\_\_
- Identify any applications that are now running on microprocessors or planned for implementation on micros that should be transferred to FLIPS equipment when available.  
\_\_\_\_\_  
\_\_\_\_\_

# APPENDIX B

## Equipment Reported in Microcomputer Survey

	Regions									
	<u>R1</u>	<u>R2</u>	<u>R3</u>	<u>R4</u>	<u>R5</u>	<u>R6</u>	<u>R8</u>	<u>R9</u>	<u>R10</u>	
ALTOS 8000	1									
8600	1									
APPLE II	1	2			28		23		1	
III		1					1			
HP 85					1					
37A				1						
IBM PC	1							1		
JONOS COURIER	2									
KAYPRO II	1			1				22		
NORTHSTAR ADVANTAGE	3									
11					6					
OSBORNE 1	7	1	1	2		2	1	3		
OTRONA ATTACHE		1								
TELERAM 3000					1					
TELEVIDEO 802	4									
VECTOR 3							2			
XEROX 820-II	2									
REGIONAL TOTALS	<u>23</u>	<u>5</u>	<u>1</u>	<u>4</u>	<u>36</u>	<u>2</u>	<u>27</u>	<u>26</u>	<u>1</u>	

# Equipment Reported in Microcomputer Survey

Stations/Area/WO

	<u>INT</u>	<u>NC</u>	<u>NE</u>	<u>PNW</u>	<u>RM</u>	<u>SE</u>	<u>SO</u>	<u>FPL</u>	<u>NA</u>	<u>WO</u>
APPLE II	3	8				6		1	5	9
III	1									
CROMENCO 3A						1				
Z-2H		1								
HP 85	2				1					3
87A							1			
125										1
IBM PC						1		8		6
INTERTEC SUPERBRAIN	1									
KAYPRO II					2					1
NORTHSTAR ADVANTAGE			1				1			
HORIZON						1				
OSBORNE 1			1	3	1	1				1
RADIO SHACK TRS80-2										2
TRS80-100					1					
Sta/Area/WO Totals	-- 7	-- 9	-- 2	-- 3	-- 5	-- 10	-- 2	-- 9	-- 5	-- 23

## APPENDIX C

### COMMENT SUMMARY

The notation to the left of each comment indicates its origin, i.e., (R5-8) is a comment from survey respondent # 8 in Region 5.

- S0-1      How adaptable are commercial software packages for this micro to Forest Service applications?  
[ ] Highly   [ ] Moderate   [ ] Marginally
- (R1-6)      Highly - Exception - DATASTAR is not usable as data entry edit package
- (R1-7)      Moderate - Nothing for entry of large datafiles - DATASTAR won't work
- (R1-9)      Highly - My applications are not that peculiar w/respect to some FS apps
- (R1-14)     Moderate - The software for output documents has worked very well. The communications packages are difficult.
- (R2-3)      Highly - We need additional software packages-PFS, WPE
- (R2-4)      Highly - All supplied by vendor.
- (R4-3)      Highly - Software geared to Business and Research communities. OK for what it is used for.
- (R4-4)      Moderate - Using communications software to transfer files to/from FCCC is difficult.
- (R5-0)      We have not purchased any at this time, but what demonstrations we have seen are impressive.
- (R5-3)      Marginally - Using this system for scaling application
- (R5-4)      Marginally - Using this system for scaling application
- (R5-5)      Marginally - Using this system for scaling application
- (R5-6)      Marginally - Using this system for scaling application
- (R5-7)      Marginally - Using this system for scaling application
- (R5-8)      Marginally - Using this system for scaling application
- (R5-11)     Highly - For our work, Visicalc is invaluable
- (R5-13)     Highly - Many applications are currently in use.
- (R5-17)     Moderate - Major use is of Forest Service developed programs (CAD)
- (R5-20)     Highly - VISA Calc great for budget planning and cost analysis
- (R5-25)     Highly - As in most applications, first the user has to know what he really wants (needs).
- (R6-1)      If core size were larer - Super Calc could be used extensively in Fiscal Mngt process.
- (R6-2)      Moderate - We aren't running anything other than spreadsheets 99% of time.
- (R9-1)      Highly - The Lotus 1-2-3 software package is being extensively used for the FLIPS planning and implementation process.
- (R9-5)      Highly - There are so many CP/M programs available that nearly any application can be handled.
- (R9-6)      Highly - There are so many CP/M programs available that nearly any application can be handled.
- (R9-7)      Marginally - Seems like most software is made for IBM Personal, Apple, and Radio Shack. Pretty hard to find CP/M.
- (R9-9)      The spreadsheet program is in continuous use and is finding more applications weekly. Because of the limitations on acquiring software for the machine, we have no F.S. experience. The value of such packages as MEASIC, DEASE2, etc., has been recognized by the people that have had experience with them on their own personal computers.



(R9-10) Same as above

(R9-11) Marginally - We have no check Software Packages locally

(INT-2) Moderate - Some are moderately adaptable, others are highly adaptable, but many are of little value.

(INT-6) Marginally - The dimensions of the arrays and variables are frequently too small for our needs. The memory size in this unit has limited our ability to increase the dimensions in the software package

(RM-1) Have not used commercial software package except the HP standard Pac supplied with machine.

(RM-3) Word processing CP/M Communications highly useful. Spreadsheet, etc. Haven't been used much.

(SE-1) Highly - Commercial packages provide good general support, but few forestry -specific packages are available.

(SE-3) Marginally - At this time. Have not reviewed that many software packages. Developing software on our own.

(SE-4) Highly - Excellent communications & edit; useful word processing

(FPL-1) Highly - Packages such as 1-2-3 and dBASE II are very flexible and easily adaptable to a variety of applications.

(FPL-2) Same as above

(FPL-3) Same as above

(FPL-6) Our applications are non-standard & require custom programming

(FPL-7) Our applications are non-standard & require custom programming

(NA-4) Highly - Very little programming is needed as commercial & public owned programs are presently available.

(WO-3) Highly - All packaged software acquired to date has been fully functional and applicable

(WO-10) Haven;t tried any

(WO-11) Highly - VISI Series (Visicall, Visitrend, Ect.) Especially useful

(WO-15) VISICALC is all we have used

(WO-16) Highly - It is possible to get software packages thru denebooks such as SOL system design lab

SO-2      How effective has vendor assistance been in trouble-shooting, maintenance, etc.?      ☐ Highly      ☐ Moderate      ☐ Marginally

(R1-3)      Marginally - None

(R1-8)      Not needed yet

(R1-9)      N/A never had to seek vendor assistance

(R1-14)      No contact

(R1-20)      Moderate - Some vendors have been very helpful while others have been of no help whatsoever.

(R2-3)      Marginally - Usually not available

(R3-1)      Marginally - No help at all. It was dumped on our doorstep.

(R4-3)      Marginally - Need to subscribe to a service contract on hardware & software - 300+/yr

(R5-0)      Haven't had any trouble

(R5-12)      Marginally - If it breaks, we take component in for repair

(R5-14)      Very seldom needed

(R5-15)      Very seldom needed

(R5-16)      Very seldom needed

(R5-20)      Highly - Good service local

(R6-1)      Moderate - Needed in formation on memory limits - answered right away.

(R6-2)      Marginally - R.O. has failed to pass contract info to forest level.

(R8-26)      Have not needed any

(R8-27)      No experience

(R9-5)      Marginally - We have really had no problems

(R9-6)      Same as above

(R9-11)      Marginally - We have had no trouble with the machine

(R10-1)      No experience to date

(INT-6)      I have never needed to call for assistance for this unit.

(NC-3)      Highly - Vendor has been very good at maintenance for micro with same day or next day turnaroung. However, there has been problems with maintenance of the printer which is not manufactured by them

(NC-9)      Highly - Turnaround time is two days; Max. charge \$75.00 - usually less than \$20.00. Been to shop 3 times. See hardware question #1 below.

(NE-2)      Marginally - No one knows what to do with warantee repair

(RM-1)      No experience

(RM-3)      Marginally - Long delays in response. Most problems solved internally

(SE-1)      Highly - When needed, we have called the technical rep's of the manufacturer, rather than vendor.

(SE-3)      Marginally - Marginally is being kind.

(SE-4)      Marginally - No help.

(SE-9)      Not used - Not requested, not offered

(SO-2)      Moderate - No assistance was necessary

(FPL-1)      Moderate - Good for hardware problems; bad for software problems.

(FPL-2)      Same as above

(FPL-3)      Same as above

(FPL-6)      Highly - Very little assistance has been sought.

(NA-1)      Marginally - Original vendor extremely poor; local vendors very helpful. Requirement to use original vendor severely hampered unit.

(NA-4)      Marginally - Since the vendor is not local, communications has been a problem and procurement time was exceedingly slow.

(WO-2)	<u>Marginally - They do no on-site installation of new peripherals or maintenance.</u>
(WO-3)	<u>Highly - Extremely few problems have been encountered and vendor response is immediate</u>
(WO-5)	<u>None obtained</u>
(WO-6)	<u>None received</u>
(WO-7)	<u>Hasn't been needed thus far</u>
(WO-8)	<u>No experience</u>
(WO-9)	<u>No experience</u>
(WO-11)	<u>Moderate - Only assistance releived was prior to purchase</u>
(WO-14)	<u>No support due to distance of vendor from actual applying site</u>
(WO-16)	<u>N/A</u>
(WO-17)	<u>Vendor assistance has been non-existent</u>
(WO-20)	<u>Absolutely non-existent</u>
(WO-21)	<u>No experience</u>

SC-3. Are some applications such as data base systems and forms-fill on this micro more sensitive to incompatibility? For example, have you encountered problems extracting data from a data base to use in a spreadsheet or graphic system?  
Yes No

(R1-1) Yes - LAN not set up to recognize Osborne  
(R1-3) Yes - Currently unable to access data base via Osborne  
(R1-9) Yes - especially have w/SuperCalc  
(R1-10) Yes - Most spreadsheet pgms are incompatible with other software  
(R1-14) Yes - The ASCII translation between Univac & Supercalc for spread sheets.  
(R4-4) Yes - Perfect/Calc/Perfect Filer require files established using PC/PF software.  
(R5-0) Not used  
(R5-3) No - N/A  
(R5-22) Neither of these have been used  
(R5-23) Yes - Does better job than current Forest Computers  
(R5-24) Have not used any  
(R6-1) N/A  
(R6-2) No - Spreadsheet data has been entered directly into spreadsheet - system too new to answer.  
(R8-1) No - Easy to program form fill - printer is key  
(R9-1) No - We investigated the compatibility issue prior to obtaining the applications software.  
(R9-2) Same as above  
(R10-1) Yes - Any incompatibility can usually be overcome by software  
(INT-5) No - DBMS system  
(NC-2) There isn't a great number of compatible systems dbms & spreadsheets available. However, this area is improving.  
(NC-7) Yes - File formats vary widely from one manufacturer to another.  
(NC-8) Yes - File formats vary widely from one manufacturer to another.  
(RM-3) Haven't tried  
(RM-5) No - New Equipment  
(SE-5) Yes - Most spreadsheets use DIF files rather than text files.  
(FPL-1) No - Of the packages I am using this is extremely easy to do (e.g. 1-2-3 to dBASE and reverse)  
(FPL-2) Same as above  
(FPL-3) Same as above  
(FPL-7) No - Commercial software not used  
(WO-2) No - Have not made the attempt.  
(WO-3) No - Software permits several file configurations that are compatible with other applications. Intentional integration is planned  
(WO-7) No - As a matter of fact DBase loads into Lotus 1-2-3 quite nicely  
(WO-8) Yes - Very little experience  
(WO-11) Yes - Having trouble driving the plotter (in its present configuration) with purchased software

(WO-13)	Unknown
(WO-16)	N/A
(WO-17)	Haven't tried
(WO-18)	The micro does not have Data Base or form fill capabilities
(WO-19)	Have not used a data base system or form fill program on this micro



S0-4

Has any software been developed locally? List by application  
name(s):

- (R1-1) JE. BAS-linkage program between computer and printer to set up  
print size on printer
- (R1-9) Yes Paula Huff's pgm in MBASIC to take care of problems in above  
question. Other MBASIC pgms to manipulate data before & after  
communication w/FCCC
- (R1-11) Yes, several shell scripts (programs). No high level language  
program development
- (R1-14) Really don't know
- (R1-20) Not at this time. Still installing commercial software packages.
- (R1-22) Scale Frequency Calculation; Weighted Average Calculation;  
Reduce Profiles
- (R1-23) Yes - Fire Reporting
- (R2-1) Lots! Specialized DBMS! Special programs for timber appraisals,  
projectlevel economic analysis, program-level economic  
analysis timber MGT planning, fleet analysis, B & F functions,  
hydrological analysis, personnel MGT planning
- (R2-2) Lots! Specialized DBMS! Special programs for timber appraisals,  
project-level economic analysis, program-level economic analysis,  
timber mgt planning, fleet analysis, B&F functions, hydrological  
analysis, personnel mgt planning
- (R2-3) Basic language programs
- (R5-1) None
- (R5-3) Yes - Deck scaling & Cull log
- (R5-4) Yes - Deck scaling & Cull log
- (R5-5) Yes - Deck scaling & Cull log
- (R5-6) Yes - Deck scaling & Cull log
- (R5-7) Yes - Deck scaling & Cull log
- (R5-8) Yes - Deck scaling & Cull log
- (R5-9) Road costs
- (R5-12) Fire dispatch system developed at regional office
- (R5-13) Yes! CAD (Computer Aided Dispatch) - POP (Personnel  
Ordering Program) Various communications  
programs.
- (R5-14) Computer Aided Dispatch - Log Scaling vehicle information  
tracking system Electronic Mail
- (R5-15) Computer Aided Dispatch - Log Scaling vehicle information  
tracking system Electronic Mail
- (R5-16) Computer Aided Dispatch - Log Scaling vehicle information  
tracking system Electronic Mail
- (R5-17) CAD - Regional Level Communications - Regional Level
- (R5-18) Forest Safety Programs - Law enforcement summary - Fire status  
summary - Radio summary inventory
- (R5-19) Not at this time
- (R5-20) Only entries into super file
- (R5-21) Personnel Ordering Program (POP)
- (R5-23) Yes - attach list -----(rest not legible)
- (R5-25) Large amount within A&FM in this Region. None personally.

(R6-1)	N/A
(R8-1)	Form fills and utilities
(R8-2)	PAYSCALE
(R8-3)	Economic analysis for wood-fired boilers
(R8-4)	Form Files
(R8-5)	None
(R8-7)	Training and time scheduling
(R8-8)	Pilot currency, Aircraft reports
(R8-10)	Campground Reservations, Nursery Inventory
(R8-11)	No
(R8-12)	No
(R8-15)	None
(R8-17)	No
(R8-18)	None
(R8-19)	Engineering
(R8-20)	Campground reservation
(R8-22)	Aviation and Fire message system
(R8-23)	Road inventory and road design
(R8-24)	None
(R8-26)	Salary, Unpaid Bills
(R9-4)	Telecommunications
(R9-7)	Yes, but it is used in the engineering field and, as far as I know, is not for the general public.
(R9-9)	Unable to develop software locally since we are not allowed software for programming languages.
(R9-10)	Same as above
(R9-13)	Yes - FES900 Data Entry - similar to FES900 on TI-990, also numerous Basic software programs for soil prescriptions, budgeting, appraisals, etc.
(R9-14)	Same as above
(R9-15)	Same as above
(R9-23)	Same as above
(R9-24)	Same as above
(R9-25)	Same as above
(R10-1)	None
(INT-1)	Yes, interface with mainframe to transfer data.
(INT-2)	Yes, special purpose statistical software
(INT-4)	Statistics, modeling
(INT-5)	Fire behavior calculations, Raws weather storage and edit, simple statistical analysis
(INT-6)	A number of programs have been developed to enter data on this unit and store it on tape. The data is then read into the larger HP9845T computer to be edited and summarized.
(NC-1)	Yes, Statistical Processing Systems, Database managers file manipulation routines, and watershed control program.
(NC-4)	Christmas tree disease management program.
(NC-5)	data collection software
(NC-6)	Spacprnt. Code reporting spacing program
(NC-7)	Statistical Analysis; Data Entry and Edit; Graphics
(NC-8)	Statistical Analysis; Data Entry and Edit; Graphics

(NC-9)	<u>1. Tree growth projection system (TWIGS - Micro version of STEMS)</u>
	<u>2. Tree list (input file for TWIGS) generator via normal/weibull distribution.</u>
	<u>3. Cuff records tracking system for Project Leaders (Budgets)</u>
(NE-1)	<u>Mailing label; AD-729 Management Code Reporting</u>
(RM-1)	<u>95% of our use involves locally-developed programs</u>
(RM-3)	<u>None yet</u>
(SE-2)	<u>Forestry Investment Analysis Program by Vasievich and Frebis (we have distributed over 200 copies, by request.</u>
(SE-3)	<u>Lab data calculation and transformation</u>
(SE-6)	<u>Yes, Data Acquisition: Auto Analyzer</u>
(SE-8)	<u>Total Biomass Cruise Program</u>
(FPL-4)	<u>Famulus data entry</u>
(FPL-6)	<u>Laboratory Real Time Data acquisition; Software Development Utilities</u>
(FPL-7)	<u>Real time laboratory data acquisition</u>
(WO-1)	<u>No</u>
(WO-2)	<u>No</u>
(WO-3)	<u>No</u>
(WO-4)	<u>Recreation Budget System, Regional Graphic Display, Budget History Display</u>
(WO-5)	<u>No</u>
(WO-6)	<u>No</u>
(WO-7)	<u>No</u>
(WO-8)	<u>TITLEPAGE - a program to center titles for report covers in three sizes of print</u>
(WO-9)	<u>Not on this machine</u>
(WO-10)	<u>SAW, EVALUE, SET</u>
(WO-12)	<u>Yes - Investment analysis. Data base, text and D/E processors sort package timber rotation simulator, sort package</u>
(WO-13)	<u>None</u>
(WO-14)	<u>N/A</u>
(WO-15)	<u>No</u>
(WO-16)	<u>Yes - SPAKK Arrester</u>
(WO-17)	<u>No</u>
(WO-18)	<u>Modifications of statistical and graphic packages for use in the development of Timber Stocking level curves and studies relative to timber measurements</u>
(WO-19)	<u>None to date</u>



SO-5

Did you have any software installation problems?

[ ] Yes [ ] No If yes, explain.

- (R1-6) Yes - DATASTAR had some patches needed to work on Model 802
- (R1-9) No - (It would be nice to be kept current w/new software releases/updates, especially e.g. SuperCalc
- (R1-10) Yes - Many pieces of software require identification of the terminal. Not all terminals are identified for selection and with multiple terminal types on Local Area Network the problem is compounded
- (R1-11) Yes - Several bad disks
- (R1-14) Yes - COM-PAC, the modem connections are not compatible with our telephone system.
- (R1-18) Yes - Received SELECT WP software without INSTALL diskette. Can't customize it for the XEROX until we receive.
- (R1-19) Yes - Didn't receive the necessary INSTALL diskette to customize it for the XEROX.
- (R1-20) Yes - 1. Received wrong disk format; 2. Working on a problem now to determine if we have a hardware or software problem with ReportStar.
- (R1-21) Yes - Received wrong disk format for FORTRAN 80; have encountered printer installation problems.
- (R1-22) Yes - Received wrong disk format for FORTRAN 80; have encountered printer installation problems
- (R4-4) Yes - Communications software
- (R5-12) Yes - CAD system has many site dependant requirements
- (R5-23) With training and understanding of non computer people
- (R9-12) Yes - Region had to supply some software due to faulty software sent by manufacturer.
- (R9-16) Communications
- (R10-1) Yes - KEYWIZ licks keyboard. Hard to read documentation for 128 keyboard and WORDSTAR
- (NE-2) Yes - The system came without an operating system.
- (NC-5) No - Except for the APPGEN software for use with the data recorders. APPLE software was straight forward.
- (SE-9) No - Have had help available from within Genetics Dept.
- (WO-10) No - One bad disk - immediately replaced
- (WO-15) Have had problems but have not determined if they are hardware or software
- (WO-20) Yes - Some instructions for operation were very difficult to decipher; lot of wasted time getting started.
- (WO-21) Yes - Word processing package approved for purchase is not compatible with 80-column display board (Videoterm) that was approved as part of same purchase.

HA-1

How reliable are the hardware components of this micro?

☐ Very reliable    ☐ Acceptable    ☐ Poor

- (R1-7) Acceptable - I have a problem with Drive B - get a BIOS error and have to reposition the disk.
- (R1-9) Acceptable - Must show a little care when transcribing OSBORNE so the disk drives don't get mis-aligned
- (R1-14) Acceptable - Haven't had any problems-yet.
- (R1-15) Acceptable - Disk drive alignment has been only problem which we fix locally
- (R1-17) Poor - Had problems w/ both micro & printer after installation. Sent back for repair.
- (R1-21) Acceptable - Alright so far
- (R2-1) Very reliable - (Exceptional)
- (R2-2) Very reliable - (Exceptional)
- (R2-3) Acceptable - Wrong hardware ordered, piecemeal arrival (over 8 months many malfunctions.
- (R2-4) Acceptable - One hardware failure
- (R5-0) Acceptable - Only problem has been with the Apple printer
- (R5-3) Poor - Because these micro were not designed for mill deck environment
- (R5-4) Poor - Because these micro were not designed for mill deck environment
- (R5-5) Poor - Because these micro were not designed for mill deck environment
- (R5-6) Poor - Because these micro were not designed for mill deck environment
- (R5-7) Poor - Because these micro were not designed for mill deck environment
- (R5-8) Poor - Because these micro were not designed for mill deck environment
- (R5-13) Very reliable - Problems that we initially experience were very soon after installation and covered by Mfg. warranty
- (R5-14) Very reliable - Seldom needed
- (R5-15) Very reliable - Seldom needed
- (R5-16) Very reliable - Seldom needed
- (R5-17) Very reliable - Once repairs were made to first mismanufactured Apple IIT we have had no major breakdowns other than one caused by improper installation of disc drive
- (R5-23) Very reliable - With training & understanding of non-computer people.
- (R6-1) Acceptable - Minor problems hooking up to a printer due to bar cables
- (R8-1) Very reliable - Units have never been out for more than 20 minutes
- (R8-17) Poor - Processor & boards are lemons
- (R9-5) Acceptable - We have had the printer in for service.
- (R9-6) Same as above
- (NC-9) Very reliable - 3 shop visits were: (1) Bad RAM chip, (2) Worn floppy drive sensor pad (3) Bad chip on 80 column card.
- (NE-2) Poor - Blew main circuit board
- (RM-3) Very reliable - Non problems to date
- (SE-1) Very reliable - Two minor hardware problems in about 1300 hours of use.
- (SE-4) Very reliable - Some initial printer problems, since corrected.
- (SO-2) Acceptable - Disc drives went bad, but they are covered by warranty
- (FPL-4) Poor - 80 column boards are very unreliable. Failures have occurred often.
- (NA-1) Poor - For this unit. Other units within NA-FPM were highly reliable.
- (WO-8) Very reliable - We have had difficulty getting the right interface board for the HP plotter

- (WO-10) Disk drives do not travel well on planes (in luggage area) otherwise v  
reliable
- (WO-16) They have been reliable since 6/13/83 before is unknown
- (WO-18) Acceptable - Have had to have the plotter and the micro computer in  
repair once
- (WO-19) Acceptable - Have had servicing on the computer and the plotter
- (WO-21) Acceptable - Several disc drive malfunctions



HA-2

How responsive is servicing of this micro? [ ] Very Reliable  
[ ] Acceptable [ ] Poor

- (R1-3) Poor - Long delays when maintenance cannot be handled by FS  
technical expertise
- (R1-8) Not needed yet
- (R1-9) Very reliable - In house!
- (R1-14) To date no need for servicing
- (R1-22) Haven't had to find out yet
- (R2-1) Very reliable - But we go to an Oregon Vendor for service
- (R2-2) Very reliable - But we go to an Oregon Vendor for service
- (R4-3) Acceptable - OK if subscribe to service
- (R5-0) Poor - 6-8 week delay for one part on the printer
- (R5-3) Acceptable - Hard to find vendor for maintenance contracts - Parts  
are hard to find
- (R5-4) Acceptable - Hard to find vendor or maintenance contracts - Parts  
are hard to find
- (R5-5) Acceptable - Hard to find vendor for maintenance contracts -  
Parts are hard to find
- (R5-6) Acceptable - Hard to find vendor for maintenance contracts -  
Parts are hard to find
- (R5-7) Acceptable - Hard to find vendor for maintenance contracts -  
Parts are hard to find
- (R5-8) Acceptable - Hard to find vendor for maintenance contracts -  
Parts are hard to find
- (R5-11) Have had no sue on Apple, but keypad was serviced once
- (R5-12) We don't have service available locally
- (R5-14) Acceptable - Not needed enough to estimate
- (R5-15) Acceptable - Not needed enough to estimate
- (R5-16) Acceptable - Not needed enough to estimate
- (R5-17) Very Reliable - Currently using local vendor for service vendor of  
above hardware not satisfactory
- (R6-2) Not tested yet
- (R8-1) Very Reliable - Same day service if equipment is brought in
- (R8-15) None experienced
- (R8-24) None required
- (R8-26) Not needed
- (R8-27) No experience
- (R9-1) Very Reliable - Any questions or comments were handled promptly by  
the vendor.
- (R9-2) Same as above
- (R9-7) Poor - When we have to go through our Regional Office, it's poor.
- (R10-1) No experience
- (INT-4) None, no servicing
- (INT-6) I have never needed servicing on this unit.
- (NE-2) Poor - No one know where to do warranty maintenance
- (RM-1) As yet, we have had no service needs
- (RM-3) Unit was purchased by WO in Maryland--we have not made arrangements  
locally for servicing.

- (SE-1) Acceptable - We have had few servicing needs, but have found that getting service is much easier if we have purchased equipment or software from local vendors.
- (SE-3) Poor - Vendor is located too far from us.
- (SE-4) Since no local vendors were involved, and few problems have been encountered.
- (FPL-1) Very reliable - Local Computerland does not charge FPL for labor to repair equipment purchased there.
- (FPL-2) Same as above
- (FPL-6) Very reliable - Very little service has been sought
- (NA-1) Poor - Original vendor extremely poor; local vendors very helpful. Requirement to use original vendor severely hampered unit.
- (NA-4) Very Reliable - Local vendors are reliable.
- (WO-2) Poor - It is necessary to take it to the vendor for maintenance or servicing.
- (WO-5) Not observed
- (WO-6) None received
- (WO-7) Hasn't needed it yet
- (WO-8) No experience
- (WO-9) No experience
- (WO-11) Have not needed servicing since initial installation
- (WO-13) Poor Comment - Can't reach service people by telephone
- (WO-17) Don't know yet
- (WO-20) Poor - Since we have so many different components none of the manufacturers will touch us - also we can't find service at the site, i.e. we have to take our hardware to them.
- (WO-21) Poor - Local dealer not very reliable

HA-3

How available are supplies for this micro such as printer ribbons, paper, discs, etc.?    ☐ Readily    ☐ Good    ☐ Long Wait

- (R1-14) Long Wait - Was nothing to do with system - internal with process for requesting & purchasing
- (R1-20) Readily - Local supplier for discs
- (R1-21) Readily - Local supplier for discs.
- (R1-22) Readily - Local supplier for discs; paper and ribbons have to be ordered.
- (R5-17) GSA item
- (R6-2) Readily - Their everywhere
- (R9-5) Good - GSA is the only problem.
- (R9-6) Same as above
- (SE-9) Depends entirely on vendor from whom ordered. Some are very dependable and some are quite unreliable.
- (SO-2) Readily - Most supplies are available from mail order firms
- (WO-8) Long Wait - Supplies are readily available on the market, but procurement procedures are cumbersome
- (WO-9) Long Wait - Supplies are readily available, but the government purchase process is cumbersome
- (WO-21) Long Wait - Ribbons not available locally

HA-4

Were there any installation problems?

☒ Yes   ☐ No   If yes, comment

(R1-12) Yes - Trouble with one COMPAC modem  
(R1-13) Yes - Trouble with one COMPAC modem  
(R1-22) Yes - Faulty power cord  
(R1-23) Yes - CPM operating system faulty  
(R2-3) Yes - Piecemeal delivery  
(R3-1) Yes - Printer was 2 months late  
(R5-3) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-4) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-5) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-6) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-7) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-8) Yes - Dirt & saw dust - Had to reverse fans, temperature controls also  
(R5-12) Yes - Contracting problems & multiple vendors caused equipment to "drip in"  
(R5-17) Yes - Due to lack of support from vendors  
(R6-2) 1 pin un connector to printer misplaced - fixed easily myself.  
(R8-6) Yes - No help available  
(R8-7) Yes - 2 defective cards  
(R8-10) Yes - Components came from different vendors  
(R8-26) Yes - Very little assistance available  
(R9-5) Yes - The communications were difficult at first.  
(R9-6) Same as above  
(R9-16) Yes - No training  
(R9-19) Yes - Poor cables to connect printers  
(R9-20) Same as above  
(R9-26) Same as above  
(R10-1) Yes - Some documentation on installation hard to read  
(SE-3) Yes - Problems with CPM card and mother board.  
(SE-4) Yes - The contract problem with monitors caused a substantial delay; also some cable problems.  
(SE-10) Yes - Vendor supplied wrong printer cable  
(SO-2) Yes - Micro developed disc problems requiring warranty service  
(FPL-1) Yes - Printer cables were delayed.  
(FPL-2) Same as above  
(FPL-3) Same as above  
(WO-8) No - But see comment above on the plotter interface.

(WO-11)

Yes - 1. Components came from vendors in shipping cartons. Had to set up myself, no experience with computers so a "hit or miss" proposition would prefer having all of the system assembled and "burned in" by vendor

2. Computer delivered with a faulty chip was lucky that some one in the office could replace it. If not the unit would have to be shipped back to vendor for repair, causing further delay.

3. Would prefer if all components came from a single vendor. That way the system would fit together, be compatible, and complete - all cards, cables, etc.

4. Shipment from various vendors were spread over many months making installation difficult.

(WO-15)

Have had problems but have not determined if they are hardware or software

(WO-16)

N/A

(WO-17)

Yes - Because vendor was located on Milwaukee, no assistance available

(WO-20)

Yes - No vendor available to assure proper installation

(WO-21)

Yes - Modem still not functional



HA-5

Should equipment acceptance standards be developed for future procurements?      ☐ Yes    ☐ No

- (R1-14) No - Micros should be purchased to fit the needs of the users in their budgets. (Individual staffs) There needs to be more attention given to meeting the needs of the user and not just purchasing equipment based on its popularity or because that's what the contract calls for
- (R1-20) Yes - Purchaser should be aware of acceptable performance.
- (R4-3) Yes - Should have standards so that communications can be established with wide range of hardware.
- (R5-0) No - This equipment goes in so easily installed that this is unnecessary
- (R5-3) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use.
- (R5-4) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use.
- (R5-5) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use.
- (R5-6) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use.
- (R5-7) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use.
- (R5-8) Yes - No - Yes for standard applications - No if standard does not take into consideration, installation site, application, or use
- (R5-12) No - I don't believe an adequate set could be developed for all the different types
- (R5-13) No - Depends on your survey results, we haven't had any problems to speak of
- (R5-17) No - Takes to long for initial users to develop skill to adequately rate equipment
- (R5-20) Yes - Yes., standards are needed but waiting over 1 year for approval is absurd, the CAD program for dispatch is a prime example!!!
- (R5-23) 60 days - Should have a maintenance agreement. extended warranty.
- (R5-25) Yes - Last National micro procurement was less than satisfactory. We are still trying to get that mess straightened out. Either purchase locally, (encourages dealer support), or sent to RO's & have them check out equip, arrange setup, etc.
- (R6-1) Yes - Because of core limitations, Supercalc can not be used to its full potential. Should have checked this out prior to purchased.



- (R6-2) Yes - Min memory, min CRT size, min storage (Zdisc drives), min printer speed, Lpi, Cpi, you could do this in a day (I could). Just estab. some simple mins. Keep the list short. Don't limit too much.
- (R9-1) Yes - The equipment and software has proved to be extremely helpful and reliable. Good applications have been developed for this machine and to insure that there is no duplication of effort, an effort should be made to insure machine to machine applications compatibility.
- (R9-2) Same as above
- (R9-12) Yes - We seem to attempt to piecemeal our systems together with obsolete or noncompatible equipment.
- (INT-1) No - Not on commercially approved devices
- (INT-5) Yes - Write in contract-user has 30 days to accept equipment before any payment is made.
- (NC-2) Yes - To make sure it is operating correctly before warranty has expired.
- (RM-3) Yes if units are purchased non-locally. If purchased locally, the buyer should set standards
- (RM-5) No - For standalone requirements
- (SE-1) No - It seems the market adequately determines what is acceptable to users. However, purchases of brands with very low market share should be avoided.
- (SE-3) Yes - Should buy from local vendors when possible with a good service contract and a good training program.
- (SE-9) No - Such "standards" could be used as limits.
- (SO-2) Yes - Computers should be burned in (operated for 150-200 hours) by vendors to detect any latent hardware problems. Our Northstar developed disc problems that would have been detected by this procedure.
- (FPL-1) Yes - Minimum standards
- (FPL-2) Same as above
- (NA-1) Yes - If purchased on National basis. Better solution is to allow local purchase.
- (NA-4) No - We can take care of this locally.
- (WO-2) No - Unless acquisition is for specialized computer equipment.
- (WO-3) My experience with this equipment has been entirely favorable therefore no need for a standard. With other equipment and negative results, I would probably feel otherwise.
- (WO-18) Due to the variety of equipment and uses for that equipment standards would be very difficult to set
- (WO-21) Yes - Standards should be used to insure suitability for intended use and compatibility of all components.

HA-6

What is a reasonable warranty period on components? ☐ 30 days  
☐ 60 Days ☐ 6 mos ☐ 12 mos ☐ Longer

- (R1-14) We don't know - Fiscal Mgt kept all this good stuff  
(R5-0) 12 months - Semiconductor equipment usually fails within this period if it will at all.  
(R5-13) 90 days - If problems occur they will usually happen within 90 days of installation.  
(R5-17) 6 months should give adequate time to develop skill and understanding of system to operate planned programs and work out hardware "bugs"  
(R5-23) 60 days - Should have a maintenance agreement. Extended warranty  
(R8-1) 12 mos  
(R8-10) 90 days  
(R8-20) 90 days  
(R8-21) 90 days  
(R8-22) 90 days  
(R8-25) 90 days  
(R9-1) 6 mos - The warranty is most important on mechanical parts subject to much usage. 90 days is usually a long enough period for software and electrical problems to surface; if they don't, the machine isn't being used enough.  
(R9-2) Same as above  
(R9-5) 6 mos - This gives us a chance to configure and experiment with the machine.  
(R9-6) Same as above  
(INT-1) Depends on use.  
(NC-7) 12 mos - Unless you are familiar with the use of the micro 60 or 90 days not long enough to test equipment.  
(NC-8) 12 mos - Unless you are familiar with the use of the micro 60 or 90 days not long enough to test equipment.  
(NC-9) 12 mos - All vendors at our location offered 12 month warranty.  
(SE-1) 6 mos - The bugs should be worked out in 6 months.  
(SE-3) 12 months - 90 days warranty on computer & components was not enough time to completely check everything out.  
(SE-9) 12 mos - Sometimes it can take that long to realize that there is a problem.  
(FPL-1) 6 mos - Most are 90 days, however.  
(FPL-2) Same as above  
(WO-7) 90 days comes with IBM - That's reasonable  
(WO-12) 90 days

HA-7      Were problems encountered in interfacing devices from other vendors, such as plotters and printers?    ☐ Yes    ☐ No  
If yes, state problem

(R1-1)      Yes - Required a program to be written so that print size could be utilized on printer.

(R1-6)      Yes - QUME would not flow control

(R1-9)      No - We have in-house expertise

(R1-14)      Don't know - in the process of purchasing a printer

(R1-17)      Yes - Problem with printer - sent back to manufacturer

(R1-20)      Yes - Getting switch setting set properly on printer.

(R1-21)      Yes - Getting correct cables & switch settings for printers and plotters.

(R1-22)      Yes - Getting correct cable configuration & proper printer switch settings.

(R1-23)      Yes - Did not receive an interface card for the Apple-Amdix monitor

(R2-3)      Yes - Wrong card

(R3-1)      Yes - It too 2 weeks & many calls to clear up to interfacing

(R5-17)      Yes - First hard disk sent (CAMEO brand) totally inadequate one printer was reported to have been used. Several months required for repair

(R5-20)      No - Not yet

(R6-1)      Yes - Bad cable provided to hook to printer.

(R6-2)      Yes - 1 pin or printer connector misplaced - easily fixed myself. (GS 11 - 1 hour).

(R8-6)      Yes - Printer not compatible with some software

(R8-7)      Yes - Defective cards

(R8-23)      Cabling problems

(R9-16)      Yes - Interface Cords

(INT-6)      I have never tried to interface other devices with the HP85

(NC-3)      Yes - We have had several problems with getting the printer up and running.

(NC-4)      Yes - Color monitor

(RM-1)      No - All peripherals were purchased from same vendor and manufactured by HP.

(RM-3)      Yes - Haven't yet figured out how to interface with a Zilog 1453 plotter--still working on it.

(RM-5)      N/A

(SE-3)      Yes - Problem was a local one. We need more assistance from computer types. This assistance is not always available.

(SE-7)      Yes - Interface procedure too complex

(SE-9)      Yes - Printer incompatibility - caused by lack of information

(SO-2)      Yes - Difficult to discover what serial interface protocols were available on Northstar. The one negative aspect of Northstar is the reluctance of the company to provide technical data about the hardware and graphics CP/M.

(WO-3)      Yes - Internal settings of Toshiba Printer not compatible with transmission format, needed to be changed.

(WO-4) Yes - Am having difficulty interfacing with Toshiba printer for occasional use.

(WO-7) No - Used mostly IBM products

(WO-8) Yes - Problem getting right interface board for HP plotter

(WO-11) Yes - Believe that we received the wrong configuration plotter to be driven by available software

(WO-13) Unknown

(WO-14) Yes - Cable to ok data printer had to be made

(WO-15) Yes - Appears there is a problem with the printer.

(WO-16) N/A

(WO-17) Yes - Modem and printer cable did not interface with AC

(WO-20) Yes - Cables were often not included - we had to buy - then hoped they worked - in one case a faulty cable caused us long delay.



HA-8

Would you buy another micro like this one?    [ ] Yes    [ ] No    Why?

- (R1-1) No - FLIPS environment should be adequate
- (R1-3) No - Limited working capability (44K) too small for many jobs or spreadsheets
- (R1-6) Yes - Good powerful tool, especially for remote locations
- (R1-7) Yes - It's powerful and reliable
- (R1-14) No - The screen is very small - hard to read & communication link is not compatible with our telephone system.
- (R1-15) Yes - Has been an excellent machine
- (R1-18) No - It would be more convenient if it were portable due to the amount of use it receives from various departments.
- (R1-20) Yes - Seems very versatile
- (R1-22) Yes - Seems very versatile & compatible with a wide range of software. One drawback is that it is very awkward for editing purposes.
- (R2-5) No - Need only one for this application.
- (R3-1) No - The printing is bad. The software for word processing is bad.
- (R4-1) No - Would purchase another micro not this make.
- (R4-4) Yes - Best value
- (R5-0) Yes - It is a very simple powerful cheap piece of equipment that can aid in improving the quality and quantity of work.
- (R5-3) No - Systems are old/hard to get parts. Not a popular brand
- (R5-4) No - Systems are old/hard to get parts. Not a popular brand
- (R5-5) No - Systems are old/hard to get parts. Not a popular brand
- (R5-6) No - Systems are old/hard to get parts. Not a popular brand
- (R5-7) No - Systems are old/hard to get parts. Not a popular brand
- (R5-8) No - Systems are old/hard to get parts. Not a popular brand
- (R5-11) Yes - Does everything we wanted and is capable of more
- (R5-12) Yes - It's good stuff
- (R5-20) Yes - Because I have done more practical work with the micro than all the rest of the computer because its user friendly and meets my needs
- (R5-21) No - Same as Computer I
- (R5-24) No - For dispatch -----(rest not legible)
- (R6-1) No - For a few hundred dollars more you could get an executive I by OSBORNE that is expandable to 256K memory.
- (R6-2) No - There is better or less out there - you lost money with your procurement process. We could have met our needs quicker, better in Corvallis, Dr.
- (R8-7) No - Poor keyboard
- (R8-8) Yes - Very user friendly
- (R8-16) Yes - User friendly
- (R8-19) No - Cumbersome to use, high breakdown rate
- (R8-22) Ease of use
- (R8-23) FLIPS can do the job better
- (R8-24) Yes - User friendly
- (R9-1) No - I am sure that there are more cost effective micros on the market than the IBM-PC. (e.g. Victor 9000)

(R9-2) Yes - It is a powerful machine well suited to the office environment.

(R9-4) Yes - Very reliable

(R9-5) Yes - Exceptional value

(R9-6) Same as above

(R9-13) No - Converting to FLIPS

(R9-14) Same as above

(R9-15) Same as above

(R9-16) No - Lack of support

(R9-17) Yes - Very reliable piece of equipment

(R9-19) No - Hard to find software

(R9-20) Same as above

(R9-23) No - Converting to FLIPS

(R9-24) Same as above

(R9-25) Same as above

(R9-26) No - Hard to find software

(R10-1) Keyboard and screen limitations

(INT-1) Yes - It does the job for which it was designed efficiently.

(INT-5) No - More memory and need a portable system (Battery Pack, etc.)

(INT-6) No - It is much too small for most jobs this project has, but it is extremely valuable as a data input tool.

(INT-7) Yes - It does our jobs efficiently at low cost.

(NC-2) Yes - There are so many compatible software packages available for this particular system.

(NC-5) Yes - The software to program the data recorders is written for an APPLE microcomputer.

(NC-6) Yes - Because of the performance and versatility of the one we now have.

(NC-7) Yes - It is very flexible in compatability with peripherals. Memory size is the biggest restriction.

(NC-8) Yes - It is very flexible in compatability with periherals. Memory size is the biggest restriction.

(NC-9) Yes - Versatile, popular which means lots of software available and many types of devices will interface to it.

(NE-1) Yes - Reliable easy to use, portable, great standard software, one bundled package, nice design, good support etc.

(NE-2) Yes - Full support by UNH. If we had been allowed to buy from them we would have saved a lot of time and money.

(RM-1) No - I would prefer a larger CRT and fa CP/M operating system

(RM-3) Excellent unit (hardware and software) for the price, and its portable.

(SE-1) No - Probably not, the performance/price ratio is better on newer equipment.

(SE-3) Yes - The computer has the capability of doing what we need. The problem is getting the computer configured correctly to do this or getting the correct software developed for our needs.

(SE-4) Yes - It has proved to be reliable and well suited for the applications we require - word processing, communicating with mainframes.

(SE-5) Yes - Good software available.



- (SE-6) Yes - Software
- (SE-7) No - 1) unreliable 2) all other project micros are multi-bus (Cromemco is S-100 bus) and components can be mixed/matched for a specific task.
- (FPL-1) Yes - Flexibility in adapting to many different applications for a reasonable amount of money.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-4) No - Equipment is not flexible enough to handle a variety of applications.
- (FPL-6) Yes - It is reliable, easy to use, relatively inexpensive, and has the analog interfaces required for our applications available.
- (FPL-7) Yes - It is reliable, easy to use, relatively inexpensive, and has the analog interfaces required for our applications available.
- (NA-1) Yes - If needs didn't change and if we could purchase locally.
- (NA-4) Yes - We are able to do a larger volume of work with fewer people.
- (WO-3) Yes - It is dependable, easy to use, extremely user-friendly, excellent vendor support.
- (WO-4) Yes - Would buy new enhanced version HP 85B with expanded memory and internal disk storage. Very reliable, flexible and powerful with CRT graphics. Portable and self-contained with storage and printer. Good software availability.
- (WO-5) Its easy to use and has great capability, large memory, and much software is being developed
- (WO-8) Yes - Satisfied
- (WO-9) Yes - Satisfied
- (WO-10) Yes - Very friendly, works well, currently have software, currently developing software for field use - many users have Apples
- (WO-11) Yes - It is easy to use, has lots of "canned" software and with expansion will satisfy our foreseeable needs
- (WO-13) No - There are better Micros now available on market
- (WO-14) Yes - Very good capabilities
- (WO-20) Yes - Works very well - does what we want
- (WO-21) Yes - It has great value as a personal word processor and is very useful for repetitive tasks like budgeting. It will be an excellent tool to assist in development of resource models.

OP-1

How user-oriented are this micro's operating systems?

☐ Exc.    ☐ Adequate    ☐ Poor

(R1-11) Poor - UNIX (UNIX) is not oriented toward the average user  
(R1-14) Exc - Very easy to operate  
(R1-20) MS-DOS-Excellent; CP/M-Poor  
(R1-21) MS-DOS-Excellent; CP/M-Poor  
(R1-22) MS-DOS-Excellent; CP/M-Poor  
(B4-4) Poor - CP/M ED utility is terrible!  
(R5-11) Exc. - We haven't done any programming - We use packaged software  
(R5-14) Has both Apple DOS 3.3 and CP/M Apple DOS is more user friendly  
(R5-15) Has both Apple DOS 3.3 and CP/M Apple DOS is more user friendly  
(R5-16) Has both Apple DOS 3.3 and CP/M Apple DOS is more user friendly  
(R9-1) Adequate - You must know something about the machine in order to use it.  
(R9-2) Same as above.  
(R9-5) Poor - This is not very helpful to most beginning users.  
(R9-6) Same as above  
(INT-6) Adequate - The manuals are at times vague and incomplete  
(NC-5) Adequate - I have seen worse.  
(NC-7) Adequate - Apple DOS is poor with text files.  
(NC-8) Adequate - Apple DOS is poor with text files.  
(SE-1) Exc - I would prefer a more powerful operating system such as CPM 3.0 or UNIX.  
(SE-3) Adequate - This depends on the operating system being used.  
(SE-9) Exc - But require more training/learning than some  
(SO-2) Adequate - Enhanced version of CP/M  
(FPL-1) Adequate - User-oriented but not user friendly.  
(FPL-2) Same as above  
(FPL-6) Adequate - Very powerful for program development. Operating system not seen by application users.  
(FPL-7) Adequate - Very powerful for program development. Operating system not seen by application users.  
(WO-10) Exc. - Significantly easier to use than CP/M  
(WO-11) Exc. I had no previous experience w/ computers and had no trouble with the system.

- OP-2      Is it desirable to institute a standard operating system, e.g.,  
UNIX, CP/M, IBM DOS, etc.?    ☐ Yes    ☐ No      Why?
- (R1-1)      Yes - Hardware-software compatibilities, broaden understanding of  
multi hardware types
- (R1-3)      Yes - Users move from station to station and would eliminate  
training for several systems
- (R1-6)      Yes - Software compatibility and user knowledge when transferred  
to new location
- (R1-9)      Yes - Compatability, easier for users to move from machine to  
machine
- (R1-10)      No - A description of various systems & their advantages could  
be provided but individual judgements.
- (R1-12)      Yes - Less confusion and training needed is reduced
- (R1-14)      Yes - If standard is flexible enough to be adapted to specific  
needs.
- (R1-15)      No - Not at this time. Need to wait until FLIPS experience is  
available and then decide if really needed! Unless needed  
shouldn't do.
- (R1-20)      Yes - For standardization & ease of use
- (R1-21)      Yes - For consistency & ease of use
- (R1-22)      Yes - For consistency & ease of use
- (R2-1)      No - There are less sophisticated OS for the general user (such  
as DOS) and more sophisticated OS for the programmer (such as  
PASCAL). In teaching, it has been useful to progress from simpler  
to more complex OS!
- (R2-2)      No - There are less sophisticated OS for the general user (such  
as DOS) and more sophisticated OS for the programmer (such as  
PASCAL). In teaching, it has been useful to progress from simpler  
to more complex OS!
- (R3-1)      Yes - UNIX is far superior to CP/M
- (R4-4)      Yes - File transfer among micros is simplified, operator  
retraining upon transfer or procurement of new hardware.
- (R5-0)      Yes - CP/M is the de facto standard in the industry.
- (R5-3)      Yes - Users only have to know one operating system
- (R5-4)      Yes - Users only have to know one operating system
- (R5-5)      Yes - Users only have to know one operating system
- (R5-6)      Yes - Users only have to know one operating system
- (R5-7)      Yes - Users only have to know one operating system
- (R5-8)      Yes - Users only have to know one operating system
- (R5-9)      No - Programming languages would be more important
- (R5-11)      Yes - So programs can be run on any micro in the office
- (R5-12)      No - You would limit the equipments vesatility and varied  
applications
- (R5-14)      No - That would insure that we would not keep up with  
state-of-the Art
- (R5-15)      No - That would insure that we would not keep up with  
state-of-the Art
- (R5-16)      No - That would insure that we would not keep up with  
state-of-the Art



- (R5-17) Yes - Better support with wider base of users of one OP system
- (R5-20) I don't know if this is necessary, only to assist user, not control
- (R5-22) Group purchase of commercial software for a single operating system (e.g. GP/M)
- (R5-23) Yes - For intra-Forest activity
- (R5-25) Desirable, yes - practical, no. CP/M sucks. Use UNIX
- (R6-1) No - If packages are self explanatory (Good manuals) they are enough
- (R6-2) CP/M, Yes - Compatibility of software. CP/M if machine is 8 bit, UNIX if machine is 16 bit.
- (R8-1) No - May limit software availability
- (R8-2) Yes - Should be standard within Region or Forest
- (R8-3) Yes - CP/M should be standard
- (R8-6) Yes - For sharing of software and procedures
- (R8-7) No - Restricts flexibility
- (R8-19) Yes - Lessen confusion
- (R8-23) Enhances software sharing
- (R8-24) Yes - For compatibility
- (R8-25) No - Inhibits innovations and flexibility. Micros are individual machines and should be flexible.
- (R8-26) Yes - So fewer systems will have to be learned
- (R8-27) Yes - Needed for compatibility
- (R9-1) Yes - To insure applications programming compatibility between machines.
- (R9-2) Same as above
- (R9-3) Yes - Because standardization makes more software available and interfacing possible.
- (R9-7) Yes - Then software would be more compatible.
- (R9-9) No - An operating system should be selected on required capabilities and not to generate Forest manual supplements.
- (R9-10) Same as above
- (R9-11) Yes - Much more efficient
- (R9-12) Yes - Forest level, yes; Regional level, no
- (R9-13) Yes - Many brands can then use same software
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-16) Yes - Support
- (R9-19) No - These are individual units
- (R9-20) Same as above
- (R9-23) Yes - Many brands can then operate on the same software
- (R9-24) Same as above
- (R9-25) Same as above
- (R9-26) No - These are individual units
- (R10-1) Yes - For transferability
- (INT-1) This is a question for manufacturers and designers - as a user there are good reasons for standard operating systems - but this one application would make no difference.
- (INT-2) No - Some desired software is only available in certain operating systems
- (INT-4) Yes - Compatibility with other systems

- (INT-5) Yes - One step towards software portability
- (INT-6) No - Local units should be allowed to select the operating system that best suits their needs and budget
- (NC-1) Yes - Portability
- (NC-2) No - Software packages have already been purchased for different operating systems - flexibility should be encouraged..
- (NC-5) No - It's easier to learn a new operating system than to reconfigure equipment for a system it wasn't designed for.
- (NC-6) No - Would limit software alternative
- (NC-7) No - Too restrictive on software.
- (NC-8) No - Too restrictive on software.
- (NE-1) No - No OS. Does everything well, Software availability is a problem.
- (NE-2) No - Everyone's needs are different
- (RM-1) Yes - To ensure software and communication compatability.
- (RM-3) No - Use requirements should determine the choice. A standard system could only be a universal operating system. How could I use IBM DOS on the KAY Pro?
- (SE-1) No - Some operating systems are limited and a standard would unreasonably limit users.
- (SE-4) No - Let the user decide.
- (SE-5) No - Each one has its own advantage.
- (SE-7) No - Each operating system has advantages/disadvantages, and it should be chosen to suit the work.
- (SE-8) No - Some are more appropriate for certain applications than others.
- (SE-9) No - Because some systems lend themselves to one use and some another. What is best for word processing may not be best for manipulating numbers.
- (SO-1) Different research application may favor different operating
- (SO-2) Yes - No single system, but 3-4 should be standard os's. Probably premature to select 16-bit OS
- (FPL-1) Yes - Standardize on one but also allow others.
- (FPL-2) Same as above
- (FPL-4) Yes - Apple DOS is different than everyone else's.
- (FPL-5) Ease of use
- (FPL-6) No - I believe this would impede the development of non-standard applications.
- (FPL-7) No - I believe this would impede the development of non-standard applications.
- (NA-1) No - Just more red tape and delays
- (NA-4) No - It would be nice but you would limit the local use in some area that have very unique needs.
- (WO-2) Yes - Software and/or data files are less machine dependent
- (WO-3) Yes - Standard operating systems within logical staff groupings could reduce software costs and training requirements. Not as necessary Nat'lly.
- (WO-4) No - ROM resident HP Extended BASIC only
- (WO-5) Yes - To facilitate software sharing
- (WO-7) No - If someone has a need for a special software package it may not be available on the standard OS

(WO-8)	Unnecessarily restrictive
(WO-9)	No - Unnecessarily restrictive
(WO-10)	No - Restrictive without insuring program
(WO-11)	APPLE with modification will utilize CP/ or APPLE DOS
(WO-16)	There would be more help available when need for other users
(WO-17)	No - Due to wide variation in the capabilities and size of the various micros it would be difficult to set standards
(WO-19)	No - The wide variation in uses capabilities and size of the various micros would make it difficult to set standards
(WO-21)	NO - Standardizing system stifles innovation in a dynamic field such as computer technology and application.
(WO-22)	Yes - Uniformity with other FS users.



OP-3      Should only those operating systems that meet the standards be allowed?      ☐ Yes      ☐ No

(R1-9)      No - Not essential

(R1-14)      No - There may be needs that are not met by the "standard"

(R4-3)      No - May be exceptions

(R5-0)      Yes - This would standardize commercial software acquisition.

(R5-17)      No - Other operating systems may be better for future use and program development

(R5-20)      Can't answer from my level

(R5-25)      No - Depends on application that sys will be used for.

(R6-2)      What standards

(R8-2)      No - Restricts creativity

(R8-8)      No - Use as tool would be reduced if standards were imposed

(R8-10)      No - Would be another artificial constraint

(R8-12)      No - Other factors may outweigh standard imposition

(R9-1)      Yes - Duplication of effort regarding applications programming and hardware procurement is an obvious waste.

(R9-2)      Same as above.

(R9-3)      No - As long as users understand the risk involved in using non-standard software, then it should be allowed in addition to standard software.

(R9-5)      No - However, we should have good justification for obtaining a system that didn't meet standards.

(R9-6)      Same as above

(R9-9)      No - An operating system should be selected on required capabilities and not to generate Forest manual supplements.

(R9-10)      Same as above

(R10-1)      No - Need flexibility. The only standard must be the ability to do the tasks the system is purchased for

(RM-3)      No - Users should set their own standards. Regulating through standards would be costly and inhibit uses of microcomputers

(INT-4)      What standards?

(INT-5)      No - Leave room to handle special needs-as needed software package only for a certain OS

(NC-1)      No - Unique applications may require extensions

(NC-2)      No - Some people may have unique applications which require uncommon operating systems.

(NC-5)      What standards, set by who?

(NC-7)      What is standard?

(SE-1)      No - The market adequately determines what is good or bad, but again, avoid untested op. systems.

(SE-4)      No - What standards?

(SE-9)      What standards?

(SO-1)      Different research application may favor different operating systems.

(FPL-5)      Yes - Except for specialized applications

(FPL-6)      No - I believe this would impede the development of non-standard applications.

(FPL-7)      No - I believe this would impede the development of non-standard applications.

- (WO-2) No - Some desirable software may not operate on a standard operating system like CP/M, etc.
- (WO-3) No - There are many specific functions that could effectively benefit from microcomputer capability even if non-standard operating systems were used.
- (WO-5) Yes - Waivers for justified special cases could be allowed
- (WO-7) Yes - We probably could develop stds that could be met by a variety of software packages
- (WO-10) No standard fits every condition
- (WO-12) As long as "standards" are not overly exclusionary
- (WO-13) Yes - Although standards are important they must be designed in a way that will provide reasonable flexibility in the choice of equipment and opportunities for users to take advantage of new technology as it becomes available.
- (WO-16) So that there will be consistency
- (WO-21) No - Standardizing systems stifles innovation in a dynamic field such as computer technology and application.

OP-4

Are this micro's programming languages easy to use?

☐ Yes ☐ No

(R1-6) Dont' know - Didn't program  
(R1-7) I've never programmed  
(R1-12) Yes - But we only have BASIC  
(R1-13) Yes - But we only have BASIC  
(R1-20) Haven't used them yet.  
(R1-21) Haven't used them yet.  
(R2-1) Yes - BASIC is easy to learn  
(R2-2) Yes - BASIC is easy to learn  
(R5-3) Yes - Standard basic - old vintage  
(R5-4) Yes - Standard basic - old vintage  
(R5-5) Yes - Standard basic - old vintage  
(R5-6) Yes - Standard basic - old vintage  
(R5-7) Yes - Standard basis - old vintage  
(R5-8) Yes - Standard basis - old vintage  
(R5-13) BASIC has over 200 versions but the Apple is faily easy to use and understand  
(R5-17) Yes - Qualified this user has completed 2 quarter lengthh classes in programming. A user could conclevably learned using documentation supplied with hard & software  
(R6-2) Basic, Most professionals coming out of school have had basic the younger people are taking advantage of the machine  
(R8-26) FORTTRAN is not, manual is unclear  
(R9-1) At this point in time, the applications programs (Wordstar, Crosstalk and 1-2-3) are what are being used most of the time, there really hasn't been time to use those languages.  
(R9-2) There hasn't really been applications programs written for the KAYPRO, it is primarily used as a word processor and a communications terminal.  
(R9-4) Don't know. No one in the division programs in S Basic only Fortran.  
(R9-9) We are not allowed the software for programming languages.  
(R9-10) Same as above  
(R9-17) Have not written any programs for local use  
(INT-5) No - Applesoft Basic is very weak  
(INT-6) Yes - Limiting in a lot of ways, but easy to use  
(NC-2) Yes - Not as many quirks as I expected.  
(NC-3) This group has not developed any programs  
(NC-6) Yes - Language Operating Manuals available  
(NC-9) Yes - 90% of programming is in PASCAL.  
(NE-1) Basic is easy to learn  
(RM-1) I prefer FORTRAN over BASIC for scientific applications.  
(RM-3) Yes - B-Basic documentation is poor  
(SE-3) The difficulty lies with the language not the computer.  
(SE-9) Yes & No - Depending on experience of user  
(FPL-1) No - Basic, yes. Pascal, Assembler, Fortran, no  
(FPL-2) Same as above  
(FPL-4) Yes - Basic

(WO-7)	Yes - It has numerous features in the basic interpreter that facillistate programming such as remembering of
(WO-11)	Yes - Have not programmed but could following the manual
(WO-13)	Depends upon which language. BASIC ok. Assembles no

OP-5

Are this micro's programming languages sufficiently powerful?

☐ Yes ☐ No

(R1-14) Yes - We've only used the MBASIC/CBASIC  
(R1-20) Haven't used them yet. They appear to be.  
(R1-21) They seem to be.  
(R2-1) Yes - FORTRAN and PASCAL are ones we write serious programs in  
(R2-2) Yes - FORTRAN and PASCAL are ones we write serious programs in  
(R4-4) No - FORTRAN would be useful.  
(R5-17) Yes - For current use  
(R5-22) So far  
(R9-1) At this point in time, the applications programs (Wordstar, Crosstalk and 1-2-3) are what are being used most of the time, there really hasn't been time to use those languages.  
(R9-2) There really hasn't been time to use those languages.  
(R9-9) We are now allowed the software for programming languages.  
(R9-10) Same as above  
(INT-1) Yes - For this application.  
(NC-2) Yes - Don't use them too terribly much.  
(NC-7) Yes - CP/M is better than Apple.  
(NC-8) Yes - CP/M is better than Apple.  
(NC-9) Yes - We will probably order Modula-2, the next generation Pascal written by Winth, founder of Pascal, and more powerful than Pascal. TWIGS pushes limits of our 64K Apple: each segment near maximum editable size; Number of segments at compiler Limit.  
(NE-1) All languages are available.  
(RM-5) Yes - For the task  
(SE-8) No - P-System is more powerful  
(FPL-1) Yes - If the programmer is sufficiently trained.  
(FPL-2) Same as above  
(FPL-4) Yes - Only tried Basic.  
(WO-4) Yes - HP Extended BASIC has a great many enhancements over standard BASIC, including graphics commands, and I/O, matrix and string functions.  
(WO-7) Yes - There are compilers available for COBOL, BASIC and PASCAL  
(WO-13) Depends upon language



OP-6

Should standards be imposed for programming languages?

☐ Yes ☐ No

- (R1-11) Yes - Many times it is desirable to transfer programs from one micro to another. Therefore, minimal differences between languages on various micros is highly desirable
- (R1-12) Yes - If FORTRAN, COBOL are needed
- (R1-13) Yes - Esp if we need FORTRAN, COBOL, etc.
- (R4-4) No - ASCII standards are sufficient.
- (R5-9) Standardization
- (R5-12) No - Impossible to evaluate or control, and more trouble than worth if you could
- (R5-13) They already are!
- (R5-17) Yes - For the same reason as noted under question re: standard operating system
- (R5-20) Yes - For sharing with others its necessary
- (R5-25) Yes - There are enough standards now to sink a battleship. Why not try enforcing them?
- (R6-2) No - Not on the micros don't make procurement of these systems any slower.
- (R8-1) No - Let the industry do it
- (R8-2) Yes - for BASIC & PASCAL
- (R8-10) Yes - Only BASIC, FORTRAN, PASCAL & COBOL should be allowed
- (R8-12) Standards in industry should be used
- (R8-20) Industry standard BASIC, FORTRAN, COBOL and PASCAL
- (R8-24) Yes - For compatibility
- (R8-26) Yes - Should conform to ANSI standards
- (R9-1) Yes - To avoid waste in the duplication of effort
- (R9-2) Same as above
- (R9-9) We are not allowed the software for programming languages and therefore are unable to comment.
- (R9-10) Same as above
- (INT-1) Probably in the universal scene - but again, makes no difference in this application.
- (INT-4) Yes - compatibility
- (INT-5) Yes - Only very general and realistic standards
- (INT-6) No - Again, local units should be allowed to select the language that best suits their needs.
- (NC-1) No - Classic conflicts would arise between business & scientific realms.
- (NC-2) Yes - It would be nice to have other peoples programs compatible with ours to we could take advantage of the compatible systems.
- (NC-3) Yes - so that programs can be used by ALL RA&S
- (NC-5) Yes - Standards are imposed already except for BASIC, I'm not sure BASIC is powerful enough to worry about.
- (NC-6) No - Let the industry wrestle with this issue.
- (NC-9) Yes - There is no standard for Basic, we've found Pascal to be quite easy to transport across various machine types such as Apple to IBM or Vector or any machine that runs Pascal.

- (RM-3) Yes - Something like ASCII for FORTRAN & COBOL would be very useful
- (RM-5) Yes - For transferable
- (SE-7) Yes - Standards within a language - yes ---which language- no
- (FPL-1) Yes - I say yes, but realize this would be difficult to implement and control.
- (FPL-2) Same as above
- (FPL-6) No - This could preclude the use of specialized languages which may be optimum for a specific task.
- (FPL-7) No - This could preclude the use of specialized languages which may be optimum for a specific task.
- (WO-5) Yes - To faciliatate software portability
- (WO-18) No - The purpose of the micro might not be for programming, but to use commercially available applicaion packs
- (WO-19) The purpose of the micro is more likely to be the use of commercially available packages rather than programming
- (WO-21) No - Not if they would hinder innovation by individual units

QA-1

How do you use this microcomputer as an office automation tool?

- (R1-1) Accounting spreadsheet and word processing
- (R1-4) Word processor, accounting record storage, stand records timber cruises
- (R1-5) Condenses filing systems, word processor, account record storage, stand records, timber cruises
- (R1-7) Only for typing letters, etc
- (R1-8) Don't yet
- (R1-9) Word processing
- (R1-10) As a word processor
- (R1-11) Primarily for electronic mail and management training tool
- (R1-12) Schedules, electronic mail, Chief and Staff notes
- (R1-13) Used by District BMA for word processing, Supercalc
- (R1-14) It will be used for travel & programming, graphics & spreadsheets
- (R1-15) General data analysis, word processing of draft material which is transmitted to CPT
- (R1-16) Data analysis, spreadsheet
- (R1-18) As a word processor
- (R1-20) Word processing
- (R1-21) Word processing
- (R1-22) Electronic file storage; word processing to include letters, reports
- (R2-1) Word Processing - Work Agendas - Graphics - Electronic Mail Executive Desk Management - DBMS
- (R2-2) Word Processing - Work Agendas - Graphics - Electronic Mail Executive Desk Management - DBMS
- (R2-3) Training, electronic spreadsheet
- (R3-1) Word processing, spreadsheet
- (R3-13) Computer Aided Dispatch (CAD)
- (R4-4) Data entry
- (R5-0) To improve the response time in fire dispatch
- (R5-1) It cuts 50% off of our calculation time.
- (R5-3) Scaling - No word processing, etc.
- (R5-4) Scaling - No word processing, etc.
- (R5-5) Scaling - No work processing, etc.
- (R5-6) Scaling - No work processing, etc.
- (R5-7) Scaling - No work processing, etc.
- (R5-8) Scaling - No work processing, etc.
- (R5-9) Limited word processing
- (R5-11) We have computerized worksheets previously done manually
- (R5-12) It automates fire emergency dispatching
- (R5-14) Spread Sheets/ Word processing/ Communications
- (R5-15) Spread Sheets/ Word processing/ Communications
- (R5-16) Spread Sheets/ Word processing/ Communications
- (R5-17) To access affirms, CAD
- (R5-18) Fire reports law enforcement reports - Budgeting
- (R5-19) To early to answer
- (R5-20) Recording planning and dispatching resource status keeping
- (R5-21) Used to develop other programs and run [ ] support programs and Visual



(R5-22) We use digital word processors  
 (R5-23) Storing and compiling transferring data for dispatch  
 (R5-24) Use to hold the COD program  
 (R5-25) Serves as computer terminal as well as being used for spreadsheet.  
 (R6-1) Would be used heavily in the spreadsheet area for accounting  
 (R6-2) Line/Staff spreadsheeting. (Budget planning)  
 (R8-1) Communications with word processor  
 (R8-2) Personal property inventory, SITE ID management  
 (R8-3) Word processing & data base mgt  
 (R8-4) Word Processor Communications  
 (R8-5) Data entry & edit  
 (R8-6) Graphics  
 (R8-8) Word processing and electronic mail  
 (R8-9) Word processing and electronic mail  
 (R8-12) For processes which are not economical on a mainframe  
 (R8-13) Word processing  
 (R8-14) WP Comms  
 (R8-16) Message switching for fire  
 (R8-17) Learning tool  
 (R8-19) Electronic mail, training, WP, data entry  
 (R8-22) Word processing and electronic mail  
 (R8-23) Electronic mail  
 (R8-24) Electronic mail, word processing, report generation  
 (R8-25) Professional WP workstation  
 (R8-26) Primary as training device  
 (R8-27) Word processor  
 (R9-3) To date it has been used primarily as a terminal  
 (R9-4) Word processing, data and document storage  
 (R9-5) Mailing lists, timber sale contracts, document editing  
 (R9-6) Same as above  
 (R9-9) Besides routine data entry/edit, the micro has been used for word processing and the spreadsheet program continues to be used daily with new applications found frequently.  
 (R9-10) Same as above  
 (R9-11) Quick Editing and Inputing of small amounts of data. Mainly used for Messages & Conference Systems - Sending & receiving  
 (R9-13) Word processing  
 (R9-16) Word processing  
 (R9-17) As a word processor  
 (R9-20) Stand-alone word processor  
 (R9-23) Word processing  
 (R10-1) Data storage and retrieval  
 (INT-3) Budget formulation & forecasting, word processing  
 (INT-4) Word processor  
 (INT-5) Limited WP  
 (NC-1) Drafting of manuscripts by scientists  
 (NC-2) For telecommunicating to electronic mail; storing and manipulating budget; and word processing.  
 (NC-4) Word processing  
 (NC-5) Write & store data recorder user manuals on it.

(NC-6) Writing letters, manuscripts, update management records, budget records.

(NC-7) Data base management and word processing

(NC-8) Data base management and word processing

(NC-9) Discussed by secretary but never implemented. Similarities noted between CPT word processor and Apple capabilities.

(NE-2) Wordstar word processing

(RM-2) Data communications, word processing, document storage

(RM-5) Potential is great for communication - Data management, filing, word processing

some word processing for drafts.

(SE-3) Have not used in this sense

(SE-8) Word Processor

(SE-9) Research reference, storage & information retrieval system, updating reports & publications, list CV, initial drafts of proposals & manuscripts.

(SE-10) Preparation of study plans, draft, reports, manuscripts

(SO-1) Word processing, budget, database records

(SO-2) Word processing

(FPL-1) Writing internal memos, transferring memos/letters to other WPE for letter quality printing, electronic mail

(FPL-3) Same as above

(FPL-5) Data transmission to FCCC. Budget formulation & monitoring. Extramural Data Base

(FPL-6) Not used for office automation

(NA-1) Files data quickly; fast access; can quickly retrieve, resort, and reassemble data as needed for area office and WO requests.

(NA-4) Individual records are kept by program area, once set up running totals are available.

(WO-1) Budget Processing, Communications, Word processing, Graphics

(WO-2) Primarily in electronic spread sheet applications

(WO-3) All correspondence and reports are drafted and edited on it. Travel voucher info processed using spreadsheet budget and planning data stored and manipulated with spreadsheet.

(WO-4) Primary usage in office tasks is as a remote WP. Correspondence and reports are entered and edited in the field and transferred by modem to Lexitron WP's.

(WO-5) Word processing drafts

(WO-6) Spread sheets

(WO-7) Reports, Analysis and we implementing communications software to utilize sys ZK at WCC for a purchasing system and vendor database

(WO-8) Not used for office automation

(WO-9) This machine not used for office automation

(WO-10) Word processor for program instructions equations, rough drafts, maintain program user info in DB system

(WO-11) Maintains records, generate reports, develops budgets, used as an analytical tool, communications

(WO-12) Word processing

(WO-13) None

(WO-14) Word processor - Access to subscription data bases (i.e. the source) - Electronic mail to the office



(WO-16) N/A

(WO-17) Limited Word processing

(WO-18) Producing graphical displays for meetings and presentation

(WO-19) Producing graphical displays for meetings and presentations and  
for repeated statistical analysis procedures

(WO-20) As a generator of special reports and graphics from mainframe  
computer - transfer of these to other sites.

(WO-21) Professional staff use it to draft and revise about 50% of all  
correspondence and nearly all reports. VISICALC is used for  
budgeting

(WO-22) Budget, data base, graphics

QA-2

What other office automation functions could the microcomputer effectively perform?

(R1-1) Conference, mail, data base  
(R1-5) Procurement plans, personnel records, budget spread sheets  
(R1-6) Spreadsneet  
(R1-7) Any and all  
(R1-8) Unsure  
(R1-9) Scheduling, electronic mail  
(R1-10) Electronic mail  
(R1-11) Spreadsheets, word processing, DBMS  
(R1-12) Perhaps some basic graphs for meetings, etc.  
(R1-13) Electrnc mail, graphs, perhaps some Engineering uses  
(R1-14) Some minor word processing - Not very effective.  
(R1-15) Project scheduling (CPM)  
(R1-16) Word processing  
(R1-21) Scheduling  
(R2-1) DBMS - Plotter and Digitizer  
(R2-2) DBMS - Plotter and Digitizer  
(R3-1) Computer mail  
(R4-3) Word processing, if larger screen  
(R4-4) Word processing  
(R5-1) Inventory  
(R5-3) None - The system is not available for other uses  
(R5-4) None - The system is not available for other uses  
(R5-5) None - The system is not available for other uses  
(R5-6) None - The system is not available for other uses  
(R5-7) None - The system is not available for other uses  
(R5-8) None - The system is not available for other uses  
(R5-12) It is not available for other uses as it was procured and implemented as a dedicated use system  
(R5-13) Budget manipulation, Fire/Aircraft Statistics, Personnel Records. You are limited only by your lack of imagination.  
(R5-17) Endless possibility  
(R5-18) Timber reports  
(R5-19) Potential  
(R5-20) All record keeping and calculating  
(R5-21) Word processing , Electronic Mail  
(R5-23) All procedural types duties  
(R5-24) Electronic Mail  
(R5-25) Word processing  
(R6-1) Could be ued for some word processing  
(R6-2) Portable Management Team Tool (When they connt \$ and plan \$)  
Secure Electronic Mail. Sensitive Data/Em/Text proc.  
(R8-3) Scheduling  
(R8-6) Electronic Mail  
(R8-7) Preparation of travel vouchers and time schedules  
(R8-8) Budgeting  
(R8-9) Budgeting

(R8-10)	<u>Budget analysis &amp; property inventory</u>
(R8-11)	<u>Electronic mail and filing</u>
(R8-13)	<u>Inter - machine communications</u>
(R8-15)	<u>Replace manual record tracking</u>
(R8-16)	<u>Business graphics &amp; spreadsheet</u>
(R8-17)	<u>Telecommunications</u>
(R8-20)	<u>Budget Analysis and property inventory</u>
(R8-21)	<u>Budget analysis and inventories</u>
(R8-22)	<u>Filing</u>
(R8-26)	<u>Inventory and budget</u>
(R8-27)	<u>Mailing lists</u>
(R9-3)	<u>N/A Doesn't link with FLIPS equipment</u>
(R9-5)	<u>Scheduling, promise cards, collections, violations, forms processing</u>
(R9-6)	<u>Same as above</u>
(R9-7)	<u>Electronic Mail</u>
(R9-9)	<u>With programming software made available, local software could be developed for special applications.</u>
(R9-10)	<u>Same as above</u>
(R9-11)	<u>Word processing</u>
(R9-13)	<u>Electronic mail, graphs, calendars, etc.</u>
(R9-14)	<u>Same as above</u>
(R9-15)	<u>Same as above</u>
(R9-20)	<u>Full scale OA</u>
(R9-23)	<u>Electronic mail, graphs, calendars, etc.</u>
(R9-24)	<u>Same as above</u>
(R9-25)	<u>Same as above</u>
(R10-1)	<u>Accounting, mailing lists , inventories</u>
(INT-2)	<u>Data Base Mgt</u>
(INT-3)	<u>Data base for information retrieval</u>
(INT-5)	<u>Electronic Mail</u>
(NC-1)	<u>Budget records</u>
(NC-2)	<u>Time sheets; purchase requisitions and orders; equipment inventory.</u>
(NC-4)	<u>Inventory records, budget records</u>
(NC-5)	<u>Spreadsheet (VISICALC, personal filing (PFS)</u>
(NC-7)	<u>Inventory</u>
(NC-8)	<u>Inventory</u>
(NE-1)	<u>Word processing, electronic mail, budget analysis, alternatives analysis, data bases.</u>
(NE-2)	<u>Budgets</u>
(RM-3)	<u>Data entry at remote sites</u>
(RM-5)	<u>Budget, electronic mail, mailing</u>
(SE-1)	<u>Data base management, electronic mail (eg E-COM)</u>
(SE-3)	<u>Word processing, budget</u>
(SE-5)	<u>Maybe electronic mail</u>
(SE-7)	<u>Marginal as word processor</u>
(SE-8)	<u>Mail List; Technical Literature File &amp; Retrieval system</u>
(SE-9)	<u>Letters and mail</u>
(SE-10)	<u>Electronic mail - computer conferences</u>
(SO-1)	<u>Data transmission, VIDTEX</u>
(SO-2)	<u>Inventory records</u>

(FPL-5)	<u>Additional Fiscal Applications</u>
(NA-4)	<u>Telecommunication with the field and with of computers</u>
(WO-2)	<u>Anything that could reasonably be accomplished with software for a database.</u>
(WO-3)	<u>Mailing lists, electronic mail, dbms filing, tracking personal appointments and schedules, transferring field data to WO</u>
(WO-4)	<u>Electronic mail, DBM filing, tables and graphics, spreadsheet analysis</u>
(WO-5)	<u>Electronic Mail</u>
(WO-10)	<u>None - with only 1 computer it is too busy</u>
(WO-11)	<u>Word processing</u>
(WO-12)	<u>Budget</u>
(WO-14)	<u>Utility is in it's portability - used for travel. Other devices are more adequate in the office environment</u>
(WO-20)	<u>Word processing</u>
(WO-21)	<u>Could be used for final copies of all correspondence but letter-quality printer was not approved for purchase.</u>
(WO-22)	<u>Word processing, scheduling</u>

QA-3

Does this microcomputer serve as an effective word processing device?    ☐ Yes    ☐ No

- (R1-1) Yes - However, for letter quality must unhook Ckidata and hook up a Oume Sprint 5
- (R1-12) Yes - For letters, small documents, except screen size and print is too small.
- (R1-14) Not as much the CPT
- (R4-3) No - Screen too small, could use larger monitor if used as word processor.
- (R4-4) Yes - However, it is not now used for word processing
- (R5-0) We utilize a Digital minicomputer for word processing.
- (R5-11) We rough draft our memos, make changes, and then have the clerical staff finalize them
- (R5-12) No - Was never intended for WP use
- (R5-13) Yes - It can by all means. However, we do not use it in this capacity.
- (R5-17) Yes - With Applewriter softwae. The AppleIle program and computer are superior to the AppleIIt computer and program . Very limited use at this time
- (R5-18) But it is used only when other processors are in use or down
- (R5-19) Yes - It probably could
- (R5-20) Yes - It can, don't have software yet
- (R5-25) Haven't bought the software yet.
- (R6-2) No - CRT too small. (52 char.)
- (R9-1) Yes - Wordstar is a powerful word processor
- (R9-3) Yes - Adequate but not as effective as Wang.
- (R9-4) Yes - Powerful enough to use as backup for Wang, user friendly.
- (R9-11) No - We have two IBM's Selectrics
- (R9-20) No - No single sheet paper feeder.
- (INT-5) No - Only limited use - most work done on display writers
- (NC-2) No - It is used at times as a word processor, but we have dedicated word processors which can be used more readily.
- (NC-3) No - We have dedicated word processing equipment available, it is much easier to learn so all word processing to date has been handled using the word processing equipment.
- (NC-5) No - The CPT work processor or the editors on the mainframes available to us are much better.
- (NC-9) Rarely used as such. Apple's screen editor is nice to use easy, etc. Demand for other processing usually limits possible word processing on machine.
- (NE-1) Wordstar is comprehensive and complete although not easy to learn.
- (RM-3) Yes - Portability is extremely helpful
- (SE-1) Yes - Good for drafts. We then transmit the text to project secretary using CPT word processor.
- (SE-3) Has not been tried. With present printer would serve for rough drafts.
- (SE-4) Yes - for producing drafts
- (SE-9) Yes - Major problem relates to extensive use of scientific & mathematical symbols and Greek letters which cannot be handled with current printer.



(SE-10) Yes - with limitation of screen size

(SO-2) Yes - To get a better one, we would need to spend over \$20,000 for a dedicated word processor.

(FPL-6) Not used for word processing

(NA-4) Yes - However, we do not use it for this because we have word processors that are more efficient.

(WO-1) Yes - Especially good in Telecommunications

(WO-2) No - We have no need to use the microcomputer as a word processor

(WO-4) Yes - Some limitations due to CRT size, but adequate compensation made in software.

(WO-7) We do not use it for that - we do not have a sophisticated WP package - we create files only.

(WO-8) No - 40-column screen too hard to work with. Stand alone word processors are more efficient in the office

(WO-9) No - 40-column screen too hard to work with. Stand - alone word processors are more efficient in the office.

(WO-10) Yes - Only used by programmer for W.P.

(WO-11) Have not used as such since we haven't purchased software

(WO-13) No - The word processing capability on TRS SO-II is much inferior to WANG. So nobody uses it

(WO-14) No - Wordstar is more of a programming language - and not as easy to use as other devices i.e. Wang etc.

(WO-16) No - We don't have the appropriate software

(WO-17) But not the main function of computer

(WO-18) No - The screen is too small and we are using a four inch wide thermal printer

(WO-19) No - Screen is too small

(WO-22) No - Not used as a word processor

LA-1

What Lab automation functions have been successfully performed by this microcomputer?

(RS-13)	<u>Not used in this capacity</u>
(INT-1)	<u>Accumulating and transmitting data from dendrology meters.</u>
(INT-5)	<u>Data entry - receive and store RAWS weather data</u>
(MC-7)	<u>Data retrieval from digitizer.</u>
(MC-8)	<u>Data retrieval from digitizer.</u>
(NE-2)	<u>Data entry through they keyboard</u>
(SE-3)	<u>Automated lab calculation of soil, plant, forest floor and water analysis.</u>
(SE-6)	<u>Replaces reading a strip chart. Generates reports.</u>
(SE-9)	<u>Direct entry of enzyme analysis data and mathematical and statistical calculations.</u>
(SE-10)	<u>Interface to digital recorder</u>
(SO-1)	<u>Process control, robotics, image analysis.</u>
(FPL-6)	<u>Real time data acquisition on destructive tests.</u>
(FPL-7)	<u>Real time data acquisition using load cells &amp; LVDTs</u>
(WO-2)	<u>Spread Sheet applications</u>

LA-2

Have problems been encountered in using this microcomputer as a  
process control computer?

(R5-13)

NOT USED IN THIS CAPACITY

(INT-1)

None after the system was understood by operators.

COMM-1

How well does this micro communicate with mainframes and other microcomputers?

[ ] Exc. [ ] Very Good [ ] Poor [ ] Haven't tried

- (R1-1) Poor - LAN doesn't recognize Osborne  
(R1-7) Exc - XTALK software has been problem-free  
(R1-10) Very well with micros. Not tested with mainframe.  
(R1-12) Very Good - But some problems getting it to communication  
Trial and error.  
(R1-13) Very Good - Some trouble making connections  
(R1-14) Poor - Communication package is not compatible with our  
telephone system when used on other phone systems (direct line)  
it's excellent.  
(Comm Pac)  
Used micro-link at 1200-300 baud. 1200 - have problems transmitting  
files, 300-seems to work fine  
(R1-20) Not operable at this time  
(R1-21) Not operational at this time  
(R2-1) Very Good - Have a linkage program among 3 districts and the SO.  
Have used to communicate with FCCC and WO DEC's  
(R2-2) Very Good - Have a linkage program among 3 districts and the SO.  
Have used to communicate with FCCC and WO DEC's  
(R2-3) Poor - Hayes micro modem has been repaired three times,  
now working properly.  
(R4-4) Fair - Term II, the available software is very cumbersome.  
(R5-3) Poor - The communication does not work  
(R5-4) Poor - The communication does not work  
(R5-5) Poor - The communication does not work  
(R5-6) Poor - The communication does not work  
(R5-7) Poor - The communication does not work  
(R5-8) Poor - The communication does not work  
(R5-13) Very Good - 40 character screen format causes "wrapping" but this has  
not been too large a barrier to hurdle.  
(R5-17) Exc. With affirms, Firescope prime, other applications, i.e., For  
collins not used at this time 40 character screen  
(R6-2) Haven't tried - Waiting on tech authority and time to pursue  
(R9-1) Exc - The Crosstalk communications emulator is an excellent  
asynchronous communications emulator.  
(R9-2) Exc - It's primary function at this point is an asynchronous  
communications.  
(R9-3) Mainframe - good Micro - haven't tried  
(R9-4) Poor - Communication or 1 line at a time (interactively). Can't send  
large data files easily.  
(R9-5) Very Good - Telephone lines seem to be the biggest problem.  
(R9-6) Same as above  
(R9-7) Exc - The only problem is in BAUD rates between the Kaypro and the  
printer.  
(INT-1) Very Good - Not for the inexperienced to try.  
(MC-2) Very Good - I've communicated to FCCC, WCC and the University  
of Minnesota Computer Center with very few problems.

(NC-5) Haven't tried - Adequate once the constraints are understood.

(NC-7) Poor - The mainframe we communicate with does not respond to stop/start signals. Not fault of Micro.

(NC-8) Poor - The mainframe we communicate with does not respond to stop/start signals. Not fault of Micro.

(NC-9) Exc - Never tried Micro to Micro but if both have a modem then foresee no problems.

(NE-2) Excellent - Programs developed at UNH

(RM-3) Exc. - Have used with IBM, Univac and CDC. No prob as so far

(SE-1) Exc - No problems. We use it extensively as both a dumb terminal and as an intelligent terminal.

(SE-4) Exc - Excellent with mainframes-haven't tried with other micros.

(SE-9) Very Good - With mainframe; have not tried with other micros

(FPL-1) Exc. - The real question in this case is software, not hardware. CROSSTALK XVI is excellent.

(FPL-2) Same as above

(WO-2) Haven't tried - It should work well

(WO-7) Haven't tried - We have used TTY at FCCC

(WO-8) Very Good - Limited experience with FCCC in interactive mode. Have not figured out how to print out interactive sessions.

(WO-9) Very Good - Not much experience on this machine. Haven't yet learned to print interactive runs with FCCC

(WO-10) Exc. - For data transfer - adequate as a terminal

(WO-17) Haven't communicated yet



COMM-2

Are communications protocol or interface standards desirable?

☐ Yes ☐ No Why?

- (R1-9) No - Again, our Local Area Network takes care of this  
(R1-23) Yes - Compatability  
(R4-4) Yes - To assure that micros can communicate with Department computer centers.  
(R5-9) Yes - Compatability  
(R5-12) Yes - No protocol, no communication possible  
(R5-14) Yes - Has to be same standard as machine communications with  
(R5-15) Yes - Has to be same standard as machine communications with  
(R5-16) Yes - Has to be same standard as machine communications with  
(R5-18) No - Not to sure of question  
(R5-25) Yes - But something reasonable. Most micro applications now are not high data communicators.  
(R6-2) Yes - RS 232c - Bell 212A  
(R8-1) No - Only TTY is needed  
(R8-2) Yes - TTY and standard software within Forest or Region  
(R8-8) No - Standards would complicate use of this tool  
(R8-10) Yes - So file transfer can be effected  
(R8-20) Yes - So files can be transferred between computers  
(R8-21) Yes - So file transfer can be effected  
(R8-22) Yes - So mainframe communications can be assured  
(R9-1) Yes - So as to minimize problems that occur when non-technical personnel attempt to exchange information among themselves.  
(R9-2) Same as above.  
(R10-1) Yes - TELENET is a statistically mixed system. A standard flow control scheme for sending form disc to TELENET would improve data integrity  
(INT-1) Yes - Increase scope of communication capability.  
(INT-5) Yes - Insure greater compatibility  
(NC-1) Yes - As far as RS-232C Asynch.  
(NC-2) Yes - So people don't have to readjust and relearn protocols every time systems are changed.  
(NC-5) Yes - They eliminate a few difficulties. Unfortunately, they do not cover every detail.  
(NC-6) Yes - Expand capabilities of micros  
(NC-7) Yes - Increase compatability  
(NC-8) Yes - Increase compatability  
(NE-1) No - We never know what other computer we may need to talk to.  
(NE-2) No - Every situation is different  
(SE-1) No - Micros are sufficiently flexible to deal with the wide variety of protocols in common use.  
(SE-4) No - There are industry standards  
(SE-7) Yes - It would simplify data transfer  
(SO-2) Yes - To ensure telecommunications compatibility  
(NA-1) No - Added layers of control. May limit other capabilities & conveniences for this one factor.  
(NA-4) Yes - If they were standardized, one would only have to know one system.

- (WO-3) Yes - To simplify the communication process and make it easier to select and configure the system
- (WO-4) Yes - to simplify establishment of communications with mainframes
- (WO-5) Yes - So departmental mainframe comms. are easier
- (WO-16) Can't determine haven't tested any

COMM-3

Is it desirable to require microcomputers to be able to send and receive data from Departmental computer centers?

☐ Yes ☐ No Why?

- (R1-1) Yes - They're here, accessible and not as costly
- (R1-7) Yes - We should have the capability in case we need it
- (R1-14) Yes - Since most of our information is on a Departmental computer and that seems to be the central pool for all forests.
- (R1-18) Yes - A large amount of our computer workload still requires processing at mainframe computers
- (R1-18) Yes - Reduces cost of data manipulation by doing it off-line and sending it to the mainframe.
- Yes - Communications capabilities are desirable for data transfer
- (R5-0) Yes - Reduces cost of data manipulation by doing it off-line and sending it to the mainframe.
- (R5-9) Yes - Data entry / edit
- (R5-12) No - Why require it if the use for which it is intended does not require it
- (R5-14) No - Only if it is to be used that way
- (R5-15) No - Only if it is to be used that way
- (R5-16) No - Only if it is to be used that way
- (R5-25) Yes - It is desirable only to X.25 1200 BPS as a general. In special cases - yes.
- (R6-2) COMET
- (R8-2) Yes - So local data can be processed on FCCC
- (R8-8) No - Should be used as local computing device, only
- (R8-10) Yes - Larger computer needed for some processing of local data
- (R8-21) Yes - More powerful machine needed to process some local data
- (R8-23) No - Let FLIPS do this
- (R9-1) Yes - Distributed processing frees communications links from needless interactive communications, it also saves money and encourages operator initiative.
- (R9-1) Same as above
- (R9-4) Yes - Main use of this machine
- (R9-9) Yes - We need to get data in and out of the Departmental Computer Centers.
- (R9-10) Same as above
- (R9-13) Yes - To send & receive data, reports, etc.
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-17) Yes - To access National Data Bases
- (R9-19) No - FLIPS
- (R9-23) Yes - To send & receive data, reports, etc.
- (R9-24) Same as above
- (R9-25) Same as above
- (R9-26) No - FLIPS
- (INT-1) No - Not everyone needs the same things.
- (INT-2) No - Many are used for restricted use and would have no need to send and receive data.

- (INT-5) No - Only if there is a need
- (NC-1) Yes - Most are capable anyway.
- (NC-2) Yes - Once the communications protocols are learned, there should be no problems.
- (NC-5) Yes - Why should a data collection or process-monitoring micro need to communicate with any computer but the one the data will be processed by?
- (NC-6) No - Too many combinations - determine locally if compatible
- (NC-7) No - Not all people need to communicate.
- (NC-8) No - Not all people need to communicate.
- (NC-9) No - Should not be a requirement but should be an option with compilation of hardware/software sources of supply if owner wants that capability. Compilation should cover at least all popular brands of micro's on this surveys results.
- (NE-1) Not everyone uses department computers.
- (NE-2) No - don't use them
- (RM-1) No - Some micros may be dedicated to specific tasks that require no communication.
- (RM-3) Yes - We use several different computers (Agency & Non-Agency.) Communication ability is vital
- (SE-1) Yes - Better communications at all levels would result; however, this can be handled with readily available communications software.
- (SE-5) No - Not at the Lab level, Forest Service computers - yes.
- (SE-7) Yes - As an option only--some units may never have the need
- (SE-9) No - Major interest is for research & research support
- (SO-2) No - Depends upon which unit is involved.
- (FPL-1) Yes - Files can be prepared off-line and then sent to host. Saves Telenet and FCCC on-line time.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-4) Yes - Off-line editing
- (FPL-6) No - Because such a requirement would impose a limitation on microcomputers which have no need to communicate with Departmental computer centers.
- (NA-4) Yes - They cost about the same as terminal and provide more functions.
- (WO-2) No - Not everyone will need this capability
- (WO-3) Yes - The capabilities of microcomputers to communicate with other computers is generally good. Taking advantage of this capability to share and transfer data is good management.
- (WO-4) Yes - Communications capabilities are desirable for data transfer
- (WO-5) Yes - Edit data locally, then send to center for processing
- (WO-7) No - Staffs that need the capability can require it. We would want it
- (WO-8) No - Only if the user intends to use the micro for this purpose
- (WO-9) No - only if the user intends to use the micro for this purpose
- (WO-10) No - Possibly an expansion option but not a requirement
- (WO-14) Yes - Used while traveling w/ Comet
- (WO-18) No - The intended use of the equipment might be stand alone applications
- (WO-21) No - Some micros may serve a strictly local function with only local applications



COMM-4

How well does this microcomputer function in a synchronous environment?

☐ Exc    ☐ Very Good    ☐ Poorly    ☐ Haven't tried

- (R1-14) Haven't tried - Because of communication problem we really haven't tried
- (R2-3) Asynchronous equipment
- (R4-4) Haven't tried - If it is possible to use this way, it would be quite useful.
- (R9-1) Haven't tried - The IBM-PC can have synchronous communications if an additional option board is purchased.
- (R9-2) Haven't tried - The KAYPRO cannot without some modifications to the system board.
- (R9-17) Poorly - It is an asynchronous machine
- (NC-1) Exc - Very Good - This is a multi-user system.
- (SE-1) Haven't tried - We do not use it for synchronous communications.
- (WO-2) Haven't tried - It should function well
- (WO-8) Haven't tried - No experience
- (WO-12) Haven't tried - Asynchronous machine



COMM-5

What protocols have been tested?

(R1-6)	<u>ASYNC</u>
(R1-11)	<u>ASYNCHRONOUS</u>
(R1-14)	<u>No chance to test at this time. We've just used the standard protocol</u>
(R1-22)	<u>TTY</u>
(R4-4)	<u>Modem 7, Term II "Arbitrary Host".</u>
(R5-12)	<u>Bell 103</u>
(R5-18)	<u>UNIVAC demand VIA TELENET &amp; WATS</u>
(R5-21)	<u>ASCII EXPRESS</u>
(R5-24)	<u>ASCII EXPRESS</u>
(R8-1)	<u>TTY</u>
(R8-2)	<u>TTY</u>
(R8-3)	<u>TTY</u>
(R8-5)	<u>TTY</u>
(R8-6)	<u>None</u>
(R8-10)	<u>TTY</u>
(R8-19)	<u>U 1004</u>
(R8-20)	<u>TTY</u>
(R8-23)	<u>TTY</u>
(R9-1)	<u>Asynchronous transmission at 300 baud and 1200 baud.</u>
(R9-2)	<u>Same as above</u>
(R9-5)	<u>X.25</u>
(R9-6)	<u>X.25</u>
(R9-9)	<u>RS232-TTY</u>
(R9-10)	<u>RS232-TTY</u>
(R9-11)	<u>Comm.</u>
(R9-17)	<u>TTY - X.25</u>
(R10-1)	<u>TTY</u>
(NC-1)	<u>Typical asynch configurations up to 9600 baud with a variety of bit configurations.</u>
(NC-7)	<u>Stop/Start and EOB/ACK</u>
(NC-8)	<u>Stop/Start and EOB/ACK</u>
(RM-1)	<u>N/A</u>
(RM-3)	<u>XON/XOFF</u>
(SE-8)	<u>2780/37/80</u>
(FPL-1)	<u>TTY</u>
(FPL-2)	<u>TTY</u>
(FPL-3)	<u>TTY</u>
(FPL-4)	<u>TTY</u>
(FPL-5)	<u>TTY</u>
(FPL-6)	<u>Xmodem</u>
(WO-1)	<u>Terminal to Terminal Communications- Terminal to Remote Carriers</u>
(WO-2)	<u>None on this microcomputer</u>
(WO-5)	<u>Ascii TTY</u>
(WO-12)	<u>FCCC, WCC, WANG, LEXITRON</u>
(WO-14)	<u>McAll-C, MODEM, X-ON, X-OFF</u>
(WO-22)	<u>TTY</u>

COMM-6

How well does this micro function in an asynchronous environment?

☐ Exc.    ☐ Very Good    ☐ Poor    ☐ Haven't tried

- (R1-7)    Exc - Always run at 300 baud
- (R5-14)   Exc - Very sophisticated communication programs are available
- (R5-15)   Exc - Very sophisticated communication programs are available
- (R5-16)   Exc - Very sophisticated communication programs are available
- (R6-2)    Haven't tried - But am aware of no major probe of other users.
- (NC-5)    Very Good - Adequate, again the constraints were not immediately obvious.
- (NC-7)    Very good - Any communications problems are not the fault of the microcomputer.
- (NC-8)    Very good - Any communications problems are not the fault of the microcomputer.
- (SE-1)    Exc - We have used it extensively and found very good results.
- (FPL-1)   Exc - Tried UNIVAC (at UW and FCCC), VAX, Comet, Telemail, some WPE, and other micros all successfully.
- (FPL-2)   Same as above.
- (WO-8)    Very Good - Limited use for this purpose
- (WO-9)    Very Good - Not much experience on this machine however
- (WO-11)   Ex. - Worked well communicating with another APPLE using Data Capture 42

COMM-7

What speeds are used for synchronous/asynchronous communications?

0-300 ☐ 1200 ☐ 2400 ☐ 4800 ☐ 9600+ ☐

(R5-14)	0-300	
(R5-15)	0-300	
(R5-16)	0-300	
(R5-18)	0-300	
(R5-19)	0-300	1200
(R5-21)	0-300	
(R5-22)	0-300	
(R5-24)	0-300	
(R6-2)	0-300	1200
(R8-1)	0-300	1200
(R8-2)	0-300	1200
(R8-3)	0-300	
(R8-4)	0-300	1200
(R8-5)	0-300	
(R8-7)	0-300	
(R8-10)	0-300	
(R8-11)	1200	
(R8-17)	0-300	
(R8-20)	0-300	
(R8-23)	0-300	
(RM-3)	0-300	1200
(SE-9)	1200 - used with TUCC	
(WO-1)	0-300	
(WO-2)	We haven't used any, but we anticipate using 300 and 1200 Baud Rates	
(WO-3)	0-300	2400
(WO-5)	1200	
(WO-7)	1200	
(WO-8)	0-300	
(WO-9)	0-300	
(WO-10)	0-300	
(WO-11)	0-300	
(WO-12)	0-300	1200

DOC-1

Are vendor-supplied manuals comprehensive and clearly written?

     Yes         No

- (R1-6)      Pretty good - varies with vendor
- (R1-10)     Yes - Adequate, nothing more
- (R1-20)     Since several vendors supplied our software, I can't answer yes or no. Most of the manuals are clearly written.
- (R1-21)     Yes - Many different vendors supplied our software.
- (R2-1)      Sometimes
- (R2-2)      Sometimes
- (R4-3)      Yes - Comprehensive but not always clearly written.
- (R4-4)      CP/M manual supplied by Digital Research is very difficult to use.
- (R5-13)     Some are excellent - Some software documentation leaves much to be desired.
- (R5-17)     Some documentation great - some not very good
- (R5-25)     Yes - Compared to DEC, UNIVAC, etc., they are the best thing in the world.
- (R6-2)      Yes - Plus many none vendor manuals on market for OS and software
- (R8-2)      Some vendors are good, others not clear
- (R8-6)      No - Not clear enough for ADP novice
- (R8-10)     Wide variation among vendors
- (R8-20)     Varies between vendors
- (R8-21)     Yes - Wide variation among vendors
- (R9-1)      Yes - However, they are clearly reference manuals and not tutorials.
- (R9-2)      Same as above
- (R9-7)      No - The information on using the editor is very poor.
- (R9-11)     Yes - Manuals have very good examples
- (INT-1)     Yes - Depends on level of prior knowledge
- (INT-6)     The manuals are at time vague and incomplete
- (NC-2)      No - At times, some questions go unanswered.
- (NC-5)      Yes - Apple manuals are, MSI manuals are not!
- (NC-6)      No - The STATPRO package documentation needs more elaboration
- (RM-3)      Yes - S-Basic manual is the exception--its poor
- (SE-1)      Yes - Many micros are not well documented and these should be avoided. Apple manuals are good, but other available manuals help as well.
- (SE-7)      No - Clear but not comprehensive
- (SE-9)      Depends entirely on experience of user.
- (FPL-1)     No - Usually no. There are a few exceptions like WORDSTAR, VISIO-PC.
- (FPL-2)     Same as above
- (FPL-3)     Same as above
- (NA-1)      Mostly. Some are better than others.
- (WO-2)      Yes - For the most part
- (WO-7)      Yes - Excellent
- (WO-10)     Yes - Most are good, none have been unintelligible
- (WO-11)     Yes - Was able to set up system using manuals. Some are better than others, as to be expected
- (WO-13)     Can be improved
- (WO-18)     Yes - They are very good!
- (WO-20)     Yes - Except XTALK, DBASE and EASYPLANNER



DOC-2

How much training did the unsophisticated user require to comfortably interact with the micro?

- (R1-1) Varies - Usually a week
- (R1-3) Approx 2 hrs intro then 10 hrs in program text
- (R1-4) 10 hours
- (R1-5) 10 hours
- (R1-6) Very little - 1-2 hours
- (R1-7) A lot for WORDSTAR- there are so many options & choices to learn
- (R1-8) 1 week
- (R1-9) Little
- (R1-10) The MP/M system is almost identical to CP/M so it is a bit difficult for a novice. The hard disk simplifies things and reduces "BDOS" errors.
- (R1-11) Approximately 6-8 hours
- (R1-12) Moderate
- (R1-13) Moderate
- (R1-14) Takes time to actually work thru examples - may be difficult depending on user.
- (R1-15) Moderate-used start-pac beginners instruction package.
- (R1-16) Very little
- (R1-18) Little training was necessary. Most software packages included a self-help session to allow a user to familiarize themselves with each system.
- (R1-19) Self-help packages allowed users to familiarize themselves with each system, thus little formalized training was necessary.
- (R1-20) 1-2 weeks
- (R1-21) 1-2 weeks
- (R1-22) 1-3 weeks
- (R2-1) About 7 days. However, we put on a 6 week training course and an optional advanced course for every employee on the Forest during the past year and half. (Class size was limited to 12 people)
- (R2-2) About 7 days. However, we put on a 6 week training course and an optional advanced course for every employee on the forest during the past year and half. (Class size was limited to 12 people)
- (R2-3) One day
- (R2-4) One day
- (R3-1) 2 weeks
- (R4-1) Some
- (R4-3) Little training
- (R4-4) 40 hours
- (R5-0) About 1 hour of instruction and 2 days of practice
- (R5-1) If the user understands the surveying field, there shouldn't be much training needed.
- (R5-3) Very little
- (R5-4) Very little
- (R5-5) Very little
- (R5-6) Very little



(R5-7) Very little  
 (R5-8) Very little  
 (R5-9) Dependant on application  
 (R5-11) Using our software, very little  
 (R5-23) Self trained  
 (R5-24) 2 day  
 (R5-17) Depends - system manager should have some formal training in programming. Routine users may require several hours - days to become effective users.  
 (R5-21) 2 days  
 (R5-22) About a week  
 (R5-12) Quite a bit but this was more a requirement of the software ie what does the program do?  
 (R5-13) Depends on the "Friendliness of the program" usually not much training.  
 (R5-14) A couple of days  
 (R5-15) A couple of days  
 (R5-16) A couple of days  
 (R5-18) Very little  
 (R5-19) Limited  
 (R5-20) Used preprogrammed tape easy for certain types hard for others  
 (R5-23) Self-trained  
 (R5-25) Several hours  
 (R6-1) Would require 2-4 hrs to use Super Calc as input only - 16 hrs to learn to program it.  
 (R6-2) For spreadsheet for 1 hour  
 (R8-1) 2 hours  
 (R8-2) 8 hours  
 (R8-3) Depends upon the application  
 (R8-4) 2 hours  
 (R8-7) 3 days formal training and 2 days hands-on  
 (R8-9) 40 hours  
 (R8-10) 4-8 hours per application  
 (R8-11) One day  
 (R8-13) 2 hours  
 (R8-14) 2 hours  
 (R8-15) Minimal  
 (R8-16) 1/2 - several hours  
 (R8-17) Many hours  
 (R8-19) Very little  
 (R8-20) 4-8 hrs per application  
 (R8-21) 4-8 hours per application  
 (R8-22) Three days  
 (R8-23) A lot  
 (R8-25) 2-3 weeks  
 (R8-26) 2 days  
 (R8-27) Minimal  
 (R9-1) 1 to 2 hours. The ATI Interactive courses seem to be excellent tools.  
 (R9-2) 1 to 2 hours

(R9-3)	<u>Minimal</u>
(R9-4)	<u>6 hours</u>
(R9-5)	<u>60 hours</u>
(R9-6)	<u>60 hours</u>
(R9-7)	<u>Very little</u>
(R9-9)	<u>Very little</u>
(R9-10)	<u>Very little</u>
(R9-11)	<u>Very little</u>
(R9-13)	<u>1-8 hours</u>
(R9-14)	<u>1-8 hours</u>
(R9-15)	<u>1-8 hours</u>
(R9-16)	<u>5-10 days</u>
(R9-17)	<u>1 week</u>
(R9-19)	<u>Read manual, used micro with constant reference to manual</u>
(R9-20)	<u>Same as above</u>
(R9-23)	<u>1-8 hours</u>
(R9-24)	<u>1-8 hours</u>
(R9-25)	<u>1-8 hours</u>
(R9-26)	<u>Read manual, used micro with constant reference to manual</u>
(R10-1)	<u>Two hours to several days</u>
(INT-1)	<u>3 to 4 hours</u>
(INT-2)	<u>Little</u>
(INT-3)	<u>Very little</u>
(INT-4)	<u>Basic and Fortran background necessary</u>
(INT-5)	<u>4 hours</u>
(INT-6)	<u>Not much--most of the programs are written with a non-computer person in mind.</u>
(INT-7)	<u>Self training with instruction manuals</u>
(NC-1)	<u>Moderate - several weeks</u>
(NC-2)	<u>1 month for 2-3 hours per day</u>
(NC-4)	<u>8 hours</u>
(NC-5)	<u>4 hours for Visicalc or PFS, several weeks for programming applications.</u>
(NC-6)	<u>3-4 hours (includes a brief overview and training by someone familiar with the system).</u>
(NC-7)	<u>Depends on the person. Approx. 40 hours</u>
(NC-8)	<u>Depends on the person. Approx. 40 hours</u>
(NC-9)	<u>2 hours</u>
(RM-1)	<u>We have no unsophisticated users</u>
(RM-3)	<u>6 hours</u>
(RM-5)	<u>6 mo</u>
(SE-1)	<u>Minimum of 40 hours on the job with tutoring, or in formal courses.</u>
(SE-3)	<u>Very little training to use our locally developed software.</u>
(SE-4)	<u>Moderate</u>
(SE-6)	<u>2 weeks</u>
(SE-7)	<u>8-16 hours</u>
(SE-8)	<u>40 hours</u>
(SE-9)	<u>Two weeks hands-on training with a well qualified instructor</u>
(SE-10)	<u>160 hours</u>
(SO-1)	<u>A very great deal, if unfamiliar with "basic" and micros in general</u>
(SO-2)	<u>8-16 hours</u>

(FPL-1) A lot. Getting over fear of breaking or losing something was most common.

(FPL-2) Same as above

(FPL-3) Same as above

(FPL-5) 24 hours

(FPL-6) Application dependent.

(FPL-7) Application dependent.

(NA-1) Less than 1 week

(NA-4) One hour will bet a person started

(NA-5) 8-10 hours of formal training. 40 hrs. without formal training to comfortably interact with micro.

(WO-1) 1 week of comprehensive training/software package

(WO-2) 8-10 hours

(WO-3) Little training is necessary to become proficient in use of the machine. One or two hours with the manual is all that was necessary.

(WO-4) Little training necessary to utilize software-manuals sufficient. Programming is more difficult, but excellent self-training manual available along with classes offered by the vendor.

(WO-5) One week

(WO-6) One week

(WO-7) Very little

(WO-8) 1 to 2 weeks

(WO-9) 1 or 2 weeks

(WO-10) How or two to run

(WO-11) No formal training, Self training

(WO-12) N/A

(WO-13) Significant amount

(WO-14) 1 week

(WO-16) N/A

(WO-17) None

(WO-18) An afternoon

(WO-19) Several hours

(WO-20) Don't know - guess about 6-8 hours with friendly software

(WO-21) Very little - users were able to use word processor after several hours with tutorial program.

(WO-22) Very little, most software comes with tutorial software.

DOC-3

How much training did the vendor provide with installation?

(R1-6)	<u>1-2 hours</u>
(R2-3)	<u>2 hours</u>
(R3-1)	<u>None!</u>
(R4-3)	<u>None. But could subscribe training package</u>
(R5-1)	<u>None to my knowledge</u>
(R5-20)	<u>Let us use tapes</u>
(R5-22)	<u>Very little about a half day</u>
(R5-23)	<u>Minimal</u>
(R5-25)	<u>Sent his 12 year old son over who embarrassed hell out of me.</u>
(INT-1)	<u>Couple of days on the instrument of which the computer is a part.</u>
(INT-3)	<u>None - National purchasing probited this opportunity</u>
(INT-5)	<u>2 hours</u>
(INT-7)	<u>None - except manuals</u>
(NC-2)	<u>None - just answered questions over the phone.</u>
(SE-9)	<u>Manuals which an inexperienced person could not understand</u>
(FPL-1)	<u>None. Some software packages have good tutorials (like 1-2-3)</u>
(NA-4)	<u>None, because vendor was in Georgia.</u>
(WO-3)	<u>None provided. Classes are offered as an extra service</u>
(WO-10)	<u>None - none requested</u>
(WO-11)	<u>Vendor did not install system, I did. None</u>
(WO-12)	<u>None requested</u>
(WO-13)	<u>2 classes</u>



- MGT-1      What positive results have been perceived by management from the employment of this micro?
- (R1-4)      Time savings
- (R1-5)      Time savings
- (R1-6)      Excellent tool to prepare users for FLIPS
- (R1-7)      Probably only that people are getting experienced with something other than a typewriter
- (R1-8)      Spreadsheet enhancements
- (R1-9)      More efficient & effective operations
- (R1-10)     Reduced apprehension about using computers. Increased speed and accuracy on spreadsheets. Ditto for word processing.
- (R1-11)     Good training tool
- (R1-12)     - Training and familiarity in computer use
- (R1-13)     Training for BMS & time savings especially because of Supercalc
- (R1-14)     - Enhanced understanding of micro role in managing Regions data resources - increased flexibility of working with field units, improved communications link would make it better
- (R1-15)     Better use of mgt time, especially in what it analyzes, spreadsheets greatly reduce staff & mgt time, word processing has greatly increased Staff Director productivity and staff productivity
- (R1-16)     - Organization & availability/access of data has improved.
- (R1-18)     - Have become more aware of how they are an integral part of the automated office. More positive attitudes about FLIPS.
- (R2-1)      Precise and highly accurate work planning, PD&B, timber sale analysis, appraisals, etc. More sophisticated and more literate environmental assessments. Much better management info about District work attainments and cost analysis
- (R2-2)      Precise and highly accurate work planning, PD&B, timber sale analysis, appraisals, etc. More sophisticated and more literate environmental assessments. Much better management information about District work attainments and cost analysis
- (R2-4)      Computer literacy
- (R3-1)      The word processor is good because management can keep making changes.
- (R4-1)      High
- (R4-3)      - Management amazed at capacity, communications, and things it will do for you. Helped dispell myth that only clerk-types should use keyboard.
- (R4-4)      Not much reaction thus far.
- (R5-0)      Our perception is that many manual functions can be automated so that fewer individuals can deal with greater complexity.
- (R5-1)      Our production has been much better.
- (R5-3)      Saved money & FTE's - saves hand calculation of all scaling tickets
- (R5-4)      Saved money & FTE's - saves hand calculation of all scaling tickets
- (R5-5)      Saved money & FTE's - saves hand calculation of all scaling tickets
- (R5-6)      Saved money & FTE's - saves hand calculation of all scaling tickets
- (R5-7)      Saved money & FTE's - saves hand calculation of all scaling tickets
- (R5-8)      Saved money & FTE's - saves hand calculation of all scaling tickets



(R5-9) Spread Sheet applications  
 (R5-11) Over 4 mos stafftime saved  
 (R5-12) Real time status of fire resources  
 (R5-13) More efficient mobilization & documentation of Fire Resources and Emergencies  
 (R5-14) Many managers have been chomping at the bit to get their own  
 (R5-15) Many managers have been chomping at the bit to get their own  
 (R5-16) Many managers have been chomping at the bit to get their own  
 (R5-17) More efficient use of time for routine tasks. More time for completing other work and improving quality of work  
 (R5-18) Management is very pleased with unit so far, they keep asking for more  
 (R5-19) Very favorable  
 (R5-20) Fair mgmt still is suspicious of computer, rightfully so considery past experience  
 (R5-21) Same as Computer I  
 (R5-22) Allows dispattee to quickly assess resources available  
 (R5-23) Faster, more efficient operation in a time of cut backs and less people. Permanent record keeping & retrieval.  
 (R5-24) Time saving, better access to Forest Resources and Cost, Fire response time is faster  
 (R5-25) Use of spreadsheets has made the budget process much easier to handle.  
 (R6-1) If Super Calc could be used for large spreadsheets - very useful  
 (R6-2) The major impact of this miro has been the introduction of a # of people to the usefulness of the computer.  
 (R8-2) Savings in time and energy  
 (R8-3) Definitely  
 (R8-8) More has been accomplished with fewer personnel  
 (R8-10) Ranger Districts have timely display of financial situation  
 (R9-1) This is hard to gauge, however, it is encouraging to see the micros used by manangement on a daily basis.  
 (R9-2) Same as above  
 (R9-4) Significantly cut on line time by enabling file & program preparation on the micro.  
 (R9-5) District personnel now have the same capabilities as the SO.  
 (R9-6) Same as above  
 (R9-7) Our production goals are being met.  
 (R9-9) Training, automation of management spreadsheets and aid in work planning.  
 (R9-10) Same as above  
 (R9-11) Used the software provided by the vendor  
 (R9-13) Has saved much time, allowing user to spend less time with clerical functions and more time in the field.  
 (R9-14) Same as above  
 (R9-15) Same as above  
 (R9-23) Same as above  
 (R9-24) Same as above  
 (R9-25) Same as above  
 (INT-2) More timely turnaround on many small analyses

- (INT-3) More timely response to questions on effect of budget changes
- (INT-4) - Increased effectiveness in manuscript development
- (INT-5) Better use of time - increased productivity
- (INT-6) Data can be entered in this unit and then read into the HP9845T without tying up the larger HP9845T. Data input has become a much more efficient process.
- (INT-7) Reduced costs and time for data summaries and analyses
- (NC-1) In-house statistical analysis with no waiting for results. Raw data management capabilities immeasurably improved.
- (NC-2) A more positive approach to automation and the development and encouragement for new undefined applications.
- (NC-3) Faster, more accurate information, in a variety of formats.
- (NC-4) Efficiency has increased
- (NC-5) Potential to save time and money involved in data entry by using data recorders along with Apple microcomputer
- (NC-6) Much time saved in data collection/analyses and preparation of reports, letters.
- (NC-7) Faster turnaround time on statistical analyses & greater interaction with micro to try out new tests or approaches.
- (NC-8) Faster turnaround time on statistical analyses & greater interaction with micro to try our new tests or approaches.
- (NC-9) 1. Excellent portable technology transfer aid. 2. Savings on mainframe computer costs.
- (NE-1) Happy and excited employees. Renewed interest in their work.
- (NE-2) Local data entry and edit
- (RM-1) Greater flexibility and speed in analysis of scientific data. Graphics capability not previously available.
- (RM-3) Productivity of Research Scientist using this equipment has increased
- (SE-1) Yes, but our use is primarily research.
- (SE-3) Too soon to tell.
- (SE-4) Cost savings in communications with mainframes
- (SE-5) With communications with mainframe, requires less travel and employee time.
- (SE-8) More effective technology transfer through micro application of research results.
- (SE9) Availability of computing capability and lowered cost.
- (SO-2) Hasn't been used long enough to evaluate
- (FPL-1) - Notion that employees must become computer literate.
- (FPL-2) - Same as above
- (FPL-3) - Same as above
- (FPL-4) To purchase others, more versatile than this.
- (FPL-5) Availability of information. Ability to make updates readily to keep information current.
- (FPL-6) Faster turnaround time on requested data collection. More feedback available on experiment in progress.
- (FPL-7) Faster turnaround time on requested data collection. More feedback available on experiment in progress.
- (NA-1) Fully accepted. Now routinely used in interactive mode to prepare annual plans, modify budgets, etc.
- (NA-4) More work is done in less time with more accuracy.
- (NA-5) The flexibility; spreadsheets

- (WO-1) Faster turnaround on up to date budget info. Other areas are minimal as staff has not yet mastered.
- (WO-2) Reports and analyses are produced more quickly and with greater accuracy.
- (WO-3) The collection, manipulation and display of Recreation data has increased and better planning has resulted. Users of the system have greatly increased.
- (WO-4) Many tasks are performed in much shorter timeframes, data displays are available for decision making that were previously unavailable, increase in use of the machine
- (WO-7) It has made some new tools for analysis available
- (WO-8) More professional looking tabular presentations and graphics
- (WO-9) More professional tabular displays and graphics.
- (WO-10) Programs written are on Micro are very popular and widely accepted - save time while providing analysis not previously available
- (WO-11) Many jobs that used to be accomplished by "hand" can now be done on the computer with short turn around in finished form - no typing required
- (WO-12) "We've got the work done", cut FCCC casts by 75% , 100% availability
- (WO-13) The original purpose is to buy a terminal to access FCCC. From that point of view, our objections have been achieved.
- (WO-14) Education and training of systems move review team members to Dist. Technology
- (WO-17) We are on the learning phase. Results are at least 6 months away
- (WO-18) Presentations have been enhanced due to the use of Graphic Presentations
- (WO-19) Excellent use of the graphics - use has increased
- (WO-20) A tremendous savings in time and cost of special analysis and report generation.
- (WO-21) Drafting and revision of correspondence and reports has been facilitated and critical review of reports by professional staff has become more effective.
- (WO-22) Time savings, data retrieval



- MGT-2      What quantifiable increases in unit productivity have occurred?
- (R1-5)      5 hours for 2400-17's
- (R1-7)      Saves retyping of rough drafts. It actually takes longer to type something on the televideo because of having to bring their work into this building and schedule time
- (R1-8)      50% planning
- (R1-10)      Not measured but see above.
- (R1-11)      Increased computer literacy and exposure to office automation functions
- (R1-12)      Some in word processing area - letters go out quicker, some help in B&F beginning to show in use of spreadsheet
- (R1-13)      Spreadsheet, saves time of BMA in former manually done tasks
- (R1-14)      As uses are developed will greatly enhance - can work in room after work hours; do not have to depend upon field units - have own capability
- (R1-15)      Increase in analysis capability, use of word processing RPA alternatives. If you want other examples, please call Jim Reid (585-3395)
- (R1-16)      Greatly increased productivity of budget people & analysts.
- (R1-21)      Micro is not fully operational yet-so can't determine any increase.
- (R1-22)      No measurable results yet.
- (R2-1)      More timber sale appraisals, Range allotment analysis. More acres of soil and water and timber stand inventories. More and better work planning, organizational analysis, including cost analysis. More written work volume
- (R2-2)      More timber sale appraisals, Range allotment analysis. More acres of soil and water and timber stand inventories. More and better work planning organizational analysis, including cost analysis. More written work volume
- (R2-3)      Electronic spreadsheets
- (R3-1)      The output of typed material & corrections has doubled.
- (R4-3)      Quicker statistical analysis, more communication via Ft. Collins Computer Center, business spreadsheet saves a lot of hand cranking when changes made.
- (R4-4)      I plan to do most of Advent data entry on Kaypro. This will free TI several hours a day during late fall and early winter.
- (R5-1)      We have been able to check all of our contracts and also have speeded up our in-house surveying,
- (R5-3)      2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day
- (R5-4)      2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day
- (R5-5)      2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day
- (R5-6)      2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day
- (R5-7)      2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day

- (R5-8) 2 less FTE's and able to provide scaling totals to timber Co. & Forest service - same shift - same day
- (R5-9) Time savings and accuracy
- (R5-12) Timely dispatch and management fo fire resources in a multiple fire response environment
- (R5-13) Gathering of statistical information, updating of record keeping, and dispatching plans in a more timely manner.
- (R5-17) Several projects completed more quickly. Update of data bases are simple and don't require totally redoing
- (R5-18) Better record deeping & speed as made some employees available for other tasks
- (R5-19) Not measurable at this time
- (R5-20) In one year we are operating with 1/2 less person
- (R5-22) Haven't been measured
- (R5-23) Given us 40% more time to deal with other projects.
- (R5-24) Resources availability and there location
- (R5-25) Timber Mgmt using our micro part time has reduced a job from 10 man mo. to 10 weeks per yr.
- (R6-2) The electronic spreadsheet has allowed alot mor "what if" analysis in th budget process (hopefully producing modre efficient budget proposals).
- (R8-1) 30% increases noted in some cases
- (R8-2) Increases in amount of data entry possible daily
- (R8-3) Several 3 month projects completed in less than one week
- (R8-4) 20% improvement in some cases
- (R8-6) Applications formerly requiring days now done in hours
- (R8-7) Time to produce resource tables reduced by 2/3
- (R8-8) Better Utilization of Aircraft
- (R8-11) Data preparation time reduced from 2 weeks to 1 day for FORPLAN
- (R8-13) 20% increases in some cases
- (R8-14) 20% in some cases
- (R8-22) Days are saved through use of electronic mail
- (R8-25) Productivity increased by 1 FTE in software development
- (R9-5) None. Work has shifted from SO to RD.
- (R9-6) Same as above
- (R9-7) 80 percent
- (R9-9) Reduction in clerical time is greater than 50%
- (R9-10) Same as above
- (R9-11) Reports have gone out to the Districts that looked better and were much more accurate.
- (R9-13) 30-60% or more time savings overall, in preparing contract, appraisals, reports
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-16) None - loss of productivity due to communications problems.
- (R9-17) Savings of time spent typing
- (R9-23) 30-60% or more time savings overall, in preparing contracts, appraisals, reports
- (R9-24) Same as above
- (R9-25) Same as above
- (R10-1) Estimated in some cases to be 20%



- (INT-1) Rapid assessment.
- (INT-2) Greatly increased statistical computing
- (INT-3) Increased quality & quantity of projections & forecasts
- (INT-5) Faster data entry and edit, quicker simple data reduction
- (INT-6) The amount of time it takes to keep the various types of data current has greatly decreased. The amount of money being spent on keypunching cards has greatly decreased as more data is being entered directly into the computer.
- (NC-1) We use the system for data base management freeing our technical help for other functions.
- (NC-2) Questions concerning micros and telecommunications have been answered in a reduced amount of time.
- (NC-3) Since micro is still relatively new to our group, quantifiable benefits will not be apparent until old systems are phased out.
- (NC-5) Data will no longer need to be keypunched.
- (NC-6) Eliminated keypunching costs, connect and computing costs to mainframes.
- (NC-7) More time for other projects.
- (NC-8) More time for other projects.
- (NC-9) Enabled the production of a Micro version of a mainframe program for growth and yield of timber that would not have been possible without it. Cuff record system improved time on tracking budgets.
- (NE-1) Processing of personnel actions has increased, unit directories are more accurate and up to date.
- (NE-2) Reduced number of trips to UNH campus for OP work
- (NC-4) Data summary, production of graphics
- (RM-1) Camera-ready figures and diagrams are produced much more quickly. Statistical and modeling studies completed in shorter time-frame.
- (RM-3) Numbers of publications initiated and in process have increased
- (RM-5) None - New equipment
- (SE-1) Faster turnaround on draft manuscripts, better analyses, and data management.
- (SE-3) Too soon to tell.
- (SE-5) Faster and cheaper transfer of data from data loggers.
- (SE-7) Some increase in output, improved time schedule
- (SE-8) Improved publication output, and office efficiency
- (SE-9) The same jobs require less time.
- (SO-2) Hasn't been used long enough to evaluate
- (FPL-1) On-line editing of large data base file took about 6 weeks. With micro this was accomplished in 1 week. Files were then transferred back to host for processing.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-4) Speed data entry over keypunch systems
- (FPL-6) As much as 300% increase in throughput on those jobs which have been automated.
- (FPL-7) As much as 300% increase in throughput on those jobs which have been automated.
- (NA-1) 30% to 60% increase in any activity requiring data manipulation. Only limit on productivity is the limitation of procurement & delays in approval. This limited our productivity by 60% in one of our field units.

- (NA-5) Cut down the man hours needed to complete RPA.
- (WO-2) Greater speed in producing reconciliations and other analyses using spread sheets
- (WO-3) Graphics for reports and meeting presentations are produced in minutes rather than hours and days that it used to take.  
Technology transfer to the field has doubled each year. Errors and retyping of correspondence have been reduced by 75% over old methods.
- (WO-4) Budget analysis is performed in hours rather than weeks. Field reports are ready upon return from the field rather than weeks later.
- (WO-8) Haven't quantified
- (WO-9) Not quantified
- (WO-10) 3 programs currently being distributed - saw program being used frequently in house
- (WO-11) Budget development and revisions accomplished in less than half the time.
- (WO-12) FCCC cost reduction
- (WO-14) To date - none - The results will be in the effectiveness of the review teams product in December 1984
- (WO-17) Too soon to qualify
- (WO-18) Less time spent graphing data for analysis or presentations
- (WO-19) Less time spent graphing data for analysis and presentations
- (WO-21) Professional use of word processor has freed administrative staff to assume additional program responsibilities. Spreadsheet software has made budget-tracking more efficient and effective.
- (WO-22) Very little - DBMS files are still in development stage, using Lotus 123 to perform budgetary tasks - saved 80 man hours, graphics software saved 100 man hours.

CUL-1

Has familiarity with the microcomputer changed attitudes within the unit towards automation? ☐ Yes ☐ No Describe

- (R1-1) Yes - Some of the ADP "magic" has disappeared
- (R1-7) Yes - They see that it's not so scary after all
- (R1-9) Yes - Increased awareness & desire to use
- (R1-10) Yes - People are less self-conscious about learning on a micro.
- (R1-11) Yes - Provided exposure to computer concepts
- (R1-12) Yes - Others have become interested in personal computers
- (R1-13) Yes - Somewhat but we restricted to BMA and computer assistant
- (R1-14) Yes - Helped increase awareness and understanding of ADP equip as a mgt tool. (Must be able to adapt to management needs) time!
- (R1-15) Yes - Several people with poor experience on large central systems are enthusiastic about micros.
- (R1-19) Yes - Less computer phobia
- (R1-20) Yes - Word processing is the main program used to date; it has been gaining acceptance.
- (R1-21) Yes - Word processing in particular
- (R2-1) Yes - The entire Forest staff is eagerly awaiting the FLIPS equipment and is eager to automate work
- (R2-2) Yes - The entire Forest staff is eagerly awaiting the FLIPS equipment and is eager to automate work
- (R3-1) Yes - The clerks are more comfortable with word processing than standard typewriters.
- (R4-1) Yes - Everyone wants one
- (R4-3) Yes - Although still have a way to go on emphasizing tools instead of toys.
- (R5-0) Yes - From initial fear we have moved to guarded enthusiasm
- (R5-1) Yes - I think that everyone now realizes that we're in the computer age.
- (R5-3) Yes - They see that it saves time and money
- (R5-4) Yes - They see that it saves time and money
- (R5-5) Yes - They see that it saves time and money
- (R5-6) Yes - They see that it saves time and money
- (R5-7) Yes - They see that it saves time and money
- (R5-8) Yes - They see that it saves time and money
- (R5-9) Small user group
- (R5-11) No - Those who were interested found projects to use the computer, those not already interested haven't used it
- (R5-12) No - Don't have much trouble with attitudes
- (R5-13) Yes - Anything that causes the job to be better, more efficiently accomplished must be accepted.
- (R5-14) Yes - Dozens of persons have acquired their own since using one in this region
- (R5-15) Yes - Dozens of persons have acquired their own since using one in this region
- (R5-16) Yes - Dozens of persons have acquired their own since using one in this region
- (R5-17) Yes - Many are less reluctant if not eager to use computers. Should make implement of FLIPs easier for several employees.



- (R5-20) Yes - Made job easier and less mistakes are made
- (R5-22) Yes - The feeling is this unit is that automation is in the future far with their manual process
- (R5-22) Yes - The feeling in this unit is that automation is in the future for all of their manual processes.
- (R5-25) Yes - Several yrs. ago this unit didn't even want 1 word proc. terminal. Now they each want a FLIPS terminal on their desk.
- (R6-2) Yes - A greater # of people are willing to use a computer to assist in the job - the small machine is less intimidating than our mini-computer.
- (R8-2) Yes - Help in getting work done has made it more acceptable
- (R8-7) Yes - People recognize it as a system to do their job better
- (R8-10) Yes - Realization that a computer can help them get their work done
- (R8-16) Yes - People are now looking forward to FLIPS
- (R8-26) Yes - Fears of unknown have been lessened
- (R9-1) Yes - Familiarity with the IBM and other micros has definitely eased Departmental misgivings about automation.
- (R9-2) Yes - Familiarity with the KAYPRO and other micros has definitely eased Departmental misgivings about automation.
- (R9-4) Yes - The first step is learning the word processor, that seems to break down barriers to on line environment.
- (R9-5) Yes - People are becoming anxious for FLIPS to arrive.
- (R9-6) Same as above
- (R9-7) Yes - More people are in favor of automation
- (R9-9) Yes - Some employees with no previous knowledge of micros, have been introduced, have become highly interested in and now own their own micros. They have been able to recognize benefits of automation and increase their productivity.
- (R9-10) Same as above
- (R9-11) Yes - An awareness that more applications could be developed.
- (R9-13) Yes - Unit now realizes important, helpful role of computers, anxious for FLIPS
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-16) Yes - So far, more negative
- (R9-23) Yes - Unit now realizes important, helpful role of computers, anxious for FLIPS
- (R9-23) Same as above
- (R9-25) Same as above
- (R10-1) Not enough experience yet
- (INT-1) No - Already had familiarity with computing systems.
- (INT-2) Yes - New analyses are now possible.
- (INT-4) No - Already have flexible attitude
- (INT-5) Yes - Better way to bet job done
- (INT-6) Yes - Data once punched onto and read from cards is now more efficiently entered directly into the computer. Scientists who once relied on cards are changing their ways.
- (NC-1) Yes - Advantages are becoming obvious to staff.
- (NC-2) Yes - People have been thinking, more often, of new applications they can develop.
- (NC-3) Yes - proper usage can create shortcuts. Can be as easy to use as telephone, etc.

- (NC-4) Yes - There is a greater interest in using the micro for tasks previously done by other methods.
- (NC-5) No - Our unit has been involved in word processing and large-scale data processing for many years.
- (NC-6) Yes - More receptive often seeing capability firsthand.
- (NC-9) No - The unit has been using various mainframes and word processors for some time. Micro is a newcomer.
- (NE-1) Yes-People are no longer afraid.
- (NE-2) No - attitude was already good
- (RM-1) No - Personnel are all highly experienced with computers of all sizes.
- (RM-3) Yes - Hands experience made us sure we could do more work, better, faster
- (SE-3) Too soon to tell.
- (SE-4) No - Unit already well acquainted with ADP
- (SE-5) Yes - Employees see the ease and speed of using micro.
- (SE-8) Yes - Less apprehension regarding planned office automation.
- (SO-2) Hasn't been used long enough to be evaluated
- (SE-9) Yes - Recognize & use computer for jobs previously not perceived to be ones that would be done by computer.
- (SE-10) Yes - Acceptance with seeing micro in action and hands-one experience
- (FPL-2) No - Not completely. Some improvement have been noticed.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-6) Yes - Technicians now view micro as a tool which makes their job easier.
- (FPL-7) Yes - Technicians now view micro as a tool which makes their job easier.
- (NA-5) Yes - Only somewhat. It's still too soon to tell. We have had our computer less than 1 year.
- (WO-1) No - The staff already had good attitude towards automation
- (WO-2) Yes - It has made it more acceptable
- (WO-3) Yes - Seven new users of the system in the last 6 months, most with little previous experience. Strong management support and utilization
- (WO-4) Yes - Reduction in reluctance of staff to use computers, increase in interest and use of micro by many other staff.
- (WO-5) No - This unit is already very automatum - oriented
- (WO-7) Yes - Many people are wanting to learn how to use it, particularly as they see success with reports, spread sheets etc in lessening work
- (WO-8) Yes - People more willing to try the micro when they see peers using them.
- (WO-9) Yes - People are more willing to try microcomputer applications as they see peers using them
- (WO-10) Yes - More comfortable with idea - aware of more possibilities
- (WO-11) Staff looking at other means to automate office
- (WO-12) Yes - Made automation more desirable
- (WO-14) No - Automation already existed
- (WO-20) Yes - More demand for its capabilities.
- (WO-21) Yes - Opportunity to interact with a micro has caused a marked increase in willingness to experiment with computer technology for many unit tasks.



- CUL-2      Describe any new methods of doing business which have evolved.
- (R1-5)      Log scale computerized, appraisal system computerized, update Stage 1 easier, and eliminated OCR typing
- (R1-7)      On-line time to FCC is cut down
- (R1-9)      More in-house computing, electronic instead of manual typing
- (R1-14)      Spreadsheets will aid in budget analysis. Gives staff unit capability to develop processes for storing & analyzing data for program development and budget allocation
- (R1-15)      Development of drafts; Fitting RPA alternatives; Group analysis of data; Increase ability to do analysis with limited staff
- (R1-16)      Changed many of our budget methods.
- (R1-21)      Using WP for large documents; tremendous time savings when corrections and reprinting are required.
- (R2-1)      [Just the big changes]
1. We have built a MIS which integrates work planning - attainment reporting and analysis. Three districts and the SO maintain an automated 1900-4 data base and report accomplishments to it on a monthly basis. The results (statistical summaries) are reported directly to MARS report quarterly.
  2. We have built a large projection model of the Forest's program and budget for purposes of multi-year PD&B. The program functions are inter-related. For example, the Timber Staff Officer may examine hypothetical impacts on forest roads and road budgets caused by changes in the timber sale program. [We have lots of little "New Methods"]
- (R2-2)      [Just the big changes]
1. We have built a MIS which integrates work planning - attainment reporting and analysis. Three districts and the SO maintain an automated 1900-4 Data base and report accomplishments to it on a monthly basis. The results (statistical summaries) are reported directly to MARS report quarterly.
  2. We have built a large projection model of the Forest's program and budget for purposes of multi-year PD & B. The program functions are inter-relate for example, the timber staff officer may examine hypothetical impacts on forest roads and road budgets caused by changes in the timber sale program. [We have lots of little "New Methods"]
- (R2-5)      Speed in auditing
- (R3-1)      File management is complex
- (R4-3)      Cost collection of loggers & manufacturers on Visical Plus, budget data probably will be put on. In-house statistical analysis on smaller jobs instead of using SPSS at Fort Collins, more business graphics being used throughout unit to communicate ideas.
- (R5-1)      If we want a quick check on any type of surveying calculations, we've got it.
- (R5-13)      Fire & Aircraft Statistics Recording
- (R5-14)      Spread Sheets, Dispatching, and many others

- (R5-15) Spread Sheets, Dispatching, and many others
- (R5-16) Spread Sheets, Dispatching, and many others
- (R5-17) Dispatch of resources to fires using "CAD" program
- (R5-18) Budget leveling at Forest level
- (R5-20) Combined and limited reports, budget planning done in a central location many man hours are saved for other units.
- (R5-22) None is yet
- (R5-23) ICP communications with SO. Improved communications with districts, more timely, etc.
- (R5-25) They are still evolving, but C.A.Dispatch is a good example. Allows 2 dispatchers to do the work of 3.
- (R6-2) Since our major number of people move to the computer to help in the budget development process.
- (R8-1) Micro used to draft replies
- (R8-2) Better financial decisions can be made more quickly
- (R8-3) Reporting procedures & communications
- (R8-4) Micro used for letter drafts
- (R8-5) Data entry now done off-line
- (R8-6) Showing relationships graphically and spread sheets for budgeting
- (R8-7) Need for calculator and typewriter is eliminated
- (R8-10) Better financial and use information has improved ability to react to public & to serve them
- (R8-11) Word processing and calculating
- (R8-13) rough draft preparation on Micros
- (R8-14) Draft document preparation
- (R8-15) Logging in of documents is more efficient
- (R8-16) Memos are transmitted electronically rather than mailed
- (R8-17) None
- (R8-22) Electronic mail for messaging
- (R8-23) Use of electronic mail
- (R8-24) Transmission of fire weather & electronic mail to field units
- (R8-25) Micros are replacing hand calculators
- (R8-26) Spreadsheet packages have replaced some hand methods
- (R9-1) For one, equipment inventories, requisition records and radio information have been computerized in data bases.
- (R9-2) For one, equipment inventories, requisition records and radio information can be computerized in data bases and spreadsheets.
- (R9-3) Not yet. We expect new methods to evolve with FLIPS.
- (R9-4) We build all files and programs with the word processor on a diskette, visually edit them, then transmit them to Fort Collins. This is much more convenient than cards.
- (R9-5) Some of the spreadsheets are now being done by machine. Inventories are being automated.
- (R9-6) Same as above
- (R9-9) Because of the efficiency of spreadsheets, more alternatives are being considered.
- (R9-10) Same as above
- (R9-11) Budgeting process has been shortened due to spreadsheet software.
- (R10-1) Spreadsheets are being used more. Rough drafts of papers
- (INT-2) Previously unattempted analyses are now performed routinely.
- (INT-4) More effective way of writing manuscripts

- (INT-5) Electronic mail
- (INT-6) The procedures used for data collection have been streamlined to make data input and analysis more efficient.
- (NC-1) Technical personnel are learning how to use ADP equipment effectively in maintaining our data base, thereby reducing pencil/paper work.
- (NC-2) The budget for this unit has been automated.
- (NC-3) Automated ledgers tracking system, files can be updated rather than recreated.
- (NC-6) Uses mentioned above all now performed in micros
- (NC-7) Electronic mail - word processing
- (NC-8) Electronic mail - word processing
- (NC-9) Budget tracking Micro version of mainframe program.
- (NE-1) Electronic transmission of AD-729 Forms.
- (NE-2) Local processing of raw data
- (NC-4) Data Management
- (RM-1) Many small tasks that were formerly done at FCCC are now done locally--and results are obtained much more quickly.
- (RM-3) Microcomputer was used for transferring dat files between different main frames with communication linkage.
- (RM-5) Manuscript entry by author
- (SE-1) We now routinely transfer files and manuscripts directly between micros at many other locations.
- (SE-5) Less use of card machines
- (SE-6) Increased sample output
- (SE-8) Less repetitive typing of draft manuscripts
- (SE-9) Research reference system is being streamlined to significantly reduce time required at all stages. Reports & manuscript first drafts are done with word processor, reducing time required in revisions.
- (SE-10) Word processing by writers (scientists)
- (FPL-1) Off-line editing and then transferring files to host.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-4) Off-line data entry
- (FPL-6) Trend towards data reduction and analysis as it is collected rather than transferring data to time sharing computer.
- (FPL-7) "Slope of the line" & "Area under the Curve" calculations which were previously done manually from X-Y plots are now done by the micro at time the data is collected freeing one full-time technician for other duties.
- (NA-1) All math operations & tables now automatically done on micro. All budget data is compiled on micro as well as annual work plans. Allows easy compilation between staff groups and other units.
- (WO-1) Not aware of any as yet
- (WO-3) Rec. Staff budget is now tracked on micro, NFS Rec budget planning is done on spreadsheet, correspondence in CRM is communicated over phone to Lexitron WP for final printing, -no rekeying.
- (WO-6) Preparation of field reports are done while in the field and printed upon return. Rec staff budget is tracked and evaluated by micro. Budget allocation process uses spreadsheet and graphics.



- (WO-7) We are developing a vendor data base which will aid us in meeting various social economic goals by providing data that was previously too combersome to bother with
- (WO-8) More "what if" type modeling in group sessions
- (WO-9) Use of "what if" type modeling with spreadsheets.
- (WO-10) Programs developed for field use-data entry and output retrieval - Apple has traveled and been used in field demonstrations
- (WO-11) Records now kept on disk instead of binders. Spreadsheets allow analysis of "what if" situations - have not been done before
- (WO-13) None
- (WO-14) Contact with me office while travelling. Instant creation of written documentaation at national meetings (Used as note-taking device)
- (WO-17) Use of spreadsheet for budget
- (WO-18) Non Programmers have used the system to develop graphic presentaions
- (WO-19) Nonprogrammmers are using the system regularly to prepare graphic presentaions and use the statisical analysis precedures
- (WO-20) Transmission of information electronically rather than written mail or telephone.
- (WO-21) Reports are drafted, reviewed, and revised by professional staff before being typed by secretarial staff. Budget information is stored, manipulated and displayed with micro rather than by hand.

SEC-1

Has use of this microcomputer posed any unique security problems?  
☐ Yes ☐ No

- (R1-6) Yes - Hard to control floppy disks
- (R1-12) Yes - Only in physical security since it is portable
- (R1-13) Yes - Physical security of portable micro-computer
- (R5-1) Yes - We had to build a special room because our first computer was stolen.
- (R5-13) No - No more than the purchase of a television set.
- (R5-17) No - Use of hard disk has been limited to some users, so as to not compromise primary use by using a password system of access
- (R6-2) • Yes - Far better security - The user can walk away with his/her diskette/data.
- (R8-7) • Yes - Protection of sensitive data
- (R8-19) Yes - Software theft & unauthorized use
- (R8-22) Preventing data from being erased on floppy disks
- (R8-23) Can be easily carried off
- (R8-25) Yes - Some peripherals and boards have been stolen
- (R8-27) • Yes - Because of its portability
- (R9-1) No - There has been no major work involving security on this machine.
- (R9-2) Same as above
- (R9-11) No - We utilize the same security systems as we do with our other ADP equipment.
- (R10-1) Access and theft of components
- (INT-6) No - The computer was just locked away in the computer room
- (SE-1) • No - Sensitive data is not maintained on the system.
- (FPL-1) • Yes - Potential for theft is greater. Lock down security devices have been ordered.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-6) No - Does not process sensitive data
- (FPL-7) No - Does not process sensitive data
- (NA-4) • No - In fact, it is probably more security for the funds spent than the mainframe.
- (WO-1) • Yes - Has to be locked up each night. Has to be dismantled each night most of the time
- (WO-5) • Yes - Its portability makes it susceptible to theft
- (WO-7) No - But, we may have to deal with security of signatures within the P.O. system at WCC
- (WO-8) • Yes - Concern is for the equipment itself, not for the data
- (WO-9) • Yes - Concern is for the security of the machine itself, not the data.
- (WO-10) • Yes - Securely shipping Micro to meetings and workshops
- (WO-11) • No - Unit kept in locked office during non-work hours. Data kept with machine
- (WO-20) • No - We just lock our office



SEC-2

Were any security measures tested and/or implemented?

☐ Yes ☐ No

- (R1-6) Yes - Backup and control of original program disks
- (R5-1) Yes - We had to build a special room because our first computer was stolen.
- (R5-12) Yes - Logon and password are required for system access
- (R5-17) Yes - 3 people have total system access. One of these is a primary user. Casual & routine users have limited access to certain volumes in hard disk
- (R5-18) Yes - Locked to table
- (R5-23) No - Only for fire & water - would have anyway for radios.
- (R6-2) No - Other than users keeping their own diskettes - They are encouraged to make backups
- (R8-22) Disks and access codes are kept locked up
- (R8-24) Yes - Locks on office door; software backed up
- (R8-26) Yes - Password protection on files
- (R9-1) No - It was felt that there was no need since there was no security work being implemented.
- (R9-2) Same as above
- (R9-4) Yes - Each person was issued their own diskette and a copy of authorized software only.
- (R9-5) Yes - We perform monthly security checks at each site. Backups of all data are being made.
- (R9-6) Same as above
- (R9-7) Yes - Security Codes
- (R9-12) Yes - Traditional - lock doors, etc.
- (R10-1) Memory clears. Users maintains own diskette files
- (INT-2) Doors were locked.
- (INT-6) Yes - A lock was placed on the door of the computer room and metal grates were placed on the windows outside. Access to the computer is limited to those persons who have my permission to use the machine.
- (NC-1) Yes - An ADP security plan has been prepared and implemented.
- (NC-2) Located behind closed doors out of view of the public.
- (NC-3) Yes - Control of diskettes, locked rooms.
- (NC-5) Yes - Computer kept in locked rooms.
- (NC-6) Yes - Primarily passive - out of view to transients - locked rooms.
- (RM-5) Yes - locked doors (office) during non-business hours.
- (SO-2) No - Access is restricted, since micro is in BMA's office
- (FPL-1) Yes - Lock down security devices to be installed.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-6) Yes - Locked cabinet to prevent theft and tampering
- (FPL-7) Yes - Locked cabinets were provided to prevent tampering.
- (NA-4) Yes - Locked program disks and duplicates made and stored in other locations.
- (WO-2) Yes - We have a lock-down arrangement
- (WO-3) Yes - Equipment was installed in room with single access door and lock was installed. Room is kept locked when vacant.

- (WO-4)    Yes - Equipment located in room with single, locked access door. Kept locked when not in use.
- (WO-5)    Yes - Unit is kept in locked cabinet when not in use
- (WO-8)    Yes - Dead-bolt locks on all computer areas.
- (WO-9)    Yes - Dead-bolt locks installed on computer aras.
- (WO-10)   Yes - "Anchor Pad" installed to protect computer from theft
- (WO-11)   No - Current security maintained
- (WO-20)   Yes - We just lock our office
- (WO-22)   Yes - Software backed up - locking device for cpu has been ordered.

PRO-1

Is it advantageous to procure microcomputers from headquarters level to take advantage of volume pricing?    ☐ Yes    ☐ No

(R1-3)    No - Takes forever to get the job done

(R1-14)    No - Depends on level of input allowed from field w/respect to needs. Really didn't receive a price break - tendency to tell people what they need - rather than assisting them to purchase equipment to fit their individual needs!

(R1-15)    No - The trade off is not worth the small discount & lack of dealing with local vendors where we could get service

(R1-22)    No - Not always

(R1-23)    No - It took over 6 mos to get the equipment and we had to buy additional interface cards/cables to interface the various components. (printer, monitor, etc.) By the time we received all the components, the warranty had expired on the computer.

(R2-1)    No - The micromarket is ruthless and changes every 30 days. Best prices can be obtained from discount dealers. WO procurement process is so long that it would be cost ineffective

(R2-2)    No - The micromarket is ruthless and changes every 30 days. Best prices can be obtained from discount dealers. WO procurement process is so long that it would be cost ineffective

(R2-3)    No - Problem in obtaining vendor support

(R4-1)    Yes for cost - No for time

(R4-3)    No - We may have saved \$500 over regular GSA contract price by using WO blanket purchase but spent \$5,000 in people's time. Too many fingers in the pie. We need advice & assistance in selection of equipment not a bunch of justification statements and No-No's.

(R4-4)    With FLIPS coming on we probably will not have great need for micros.

(R5-0)    No - Technology and pricing in this area are subject to amazing changes within the time it takes to let a contract.

(R5-3)    No - Usually price breaks are better from vendor direct

(R5-4)    No - Usually price breaks are better from vendor direct

(R5-5)    No - Usually price breaks are better from vendor direct

(R5-6)    No - Usually price breaks are better from vendor direct

(R5-7)    No - Usually price breaks are better from vendor direct

(R5-8)    No - Usually price breaks are better from vendor direct

(R5-12)    No - The large procurement we were involved in resulted in a ridiculous number of vendors, un-needed hardware and software, and no one contact for problems

(R5-13)    Yes - Not if desired delivery dates can not be met!!

(R5-14)    Yes - Only on the new Data General personal computer

(R5-15)    Yes - Only on the new Data General personal computer

(R5-16)    Yes - Only on the new Data General personal computer

(R5-17)    We have not found national procurement totally adequate. Suggest regional level procurement

(R5-19)    No - Absolutely not, far more costly!!! Far more time consuming to implement hardware

(R5-20)    No - Local service and procurement speed out weigh savings

(R5-22)    No - The price of micro's drops faster than it takes to procure at higher levels



- (R5-23) No - Better to go local - get local servicing (Chapanyway).
- (R5-24) No - Because generally on a local basis we can usually end up getting a better deal
- (R5-25) No - Not the way it went last time around.
- (R6-2) No - Takes too long and freedom of config. for your own needs not avail.
- (R8-1) No - Takes too much time
- (R8-2) No - Cost of delays outweighs volume pricing savings
- (R8-3) No - Prices are falling fast, sometimes obsolete by delivery
- (R8-4) No - Takes too long
- (R8-8) No - Local use of GSA schedules is better
- (R8-10) No - Delays outweighs any financial advantages
- (R8-11) No - Not much difference in price
- (R8-12) NO - No advantage over federal supply schedules
- (R8-15) No - Takes too long
- (R8-21) No - Delays unacceptable
- (R8-27) Yes - However, loss of time may outweigh pricing savings
- (R9-1) No - Sometimes it is hard for headquarters to perceive what the software & hardware requirements for an office are and this can introduce inefficiency in the procurement process.
- (R9-2) Same as above
- (R9-3) Sometimes
- (R9-9) Yes - A variety should be available on GSA contract.
- (R9-10) Same as above
- (R9-12) Yes - If those procured meet standards & objective of proposed use.
- (R10-1) No Warranty problems in Alaska. Lost advantage cancelled by lack of local assistance during problem periods.
- (INT-2) No - In each case we were able to get a local price that would have beat the price we paid.
- (INT-3) No - The advantage of local vendor support is lost, also there is very little price advantage.
- (NC-1) No - Unique applications tend to require unique machines.
- (NC-2) No - Price may be good but maintenance and questions go unanswered.
- (NC-3) Yes - Pricewise, yes coordination of procurement needs may be made difficult without local help.
- (NC-6) Nationwide, price and service available is extremely variable. Delegate/redelegate to the lowest practical levels. The current procedure is absurdly long and involved and in our case costed more and resulted in poorer service.
- (NE-1) No - Slows down entire process. We can get them faster and cheaper locally.
- (NE-2) No - All of our problems relate to the national procurement. We would have been operational over a year ago except for this national effort.
- (RM-3) No - This was one with our unit. This means that our unit was not purchased locally, thus no local service. Also, users define their own requirements, so they should purchase. Could be advantageous if several users wanted the same system.

- (SE-1) No - The microcomputer market has become very competitive, minor savings in price will be gained by volume pricing. However, these gains are outweighed by other problems, especially difficulty in getting support or maintenance from a distance. Negotiation with local vendors builds better relations.
- (SE-3) No - Could have locally purchased some computer for much less.
- (SE-4) No - No advantage was gained. We could have purchased it at a lower price locally - a much lower price.
- (SE-7) Yes - Provided systems/components can be purchased/matched for the task, rather than attempting to match all tasks to one equipment type
- (SO-2) No - Our unit was very disenchanted with the national procurement Software and equipment arrived piecemeal from all over the country, and the original vendor for the microcomputer defaulted. Our use of the micro and software was delayed 6-9 months by the combination of a national contract and vendor defaults. Speedy service from local dealers is hard to obtain when the hardware is not purchased from them.
- (FPL-1) No - Local vendor gives 28% Govt. discount.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (WO-5) No - Pricing advantages outweighed by loss of service
- (WO-7) Yes - If people will describe needs on a functional basis rather than asking for specific machines
- (WO-11) No - What you save on price you lose on not having a local vendor for help and service.
- (WO-12) Yes - Volume discounts are very desirable - As long as a reasonable degree of choice to meet local needs is incorporated
- (WO-13) No - Microcomputer Technology has developed so fast that the advantage of volume pricing is cost effective in considering the time required to reach a volume Micro
- (WO-14) No - Lack of dealer support & 1 year lag in procurement is unacceptable. No discount was received greater than that available on open market
- (WO-17) No - Volume purchasing from some distant supplies precludes on site installation assistance and training
- (WO-20) No - I doubt it.
- (WO-21) Yes - This should be an option, but individual unit procurement should also be allowed.



PRO-2

Would it be more advantageous to be in a position to negotiate with local vendors?    ☐ Yes    ☐ No

- (R1-3) : Yes - Quicker acquisition and better maintenance support would result
- (R1-7) Yes - If we had a maintenance contract with the local vendor it would
- (R1-11) Yes - Several manufacturers require contacting dealers first.
- (R1-14) Yes - At least training and informational needs would be met.
- (R1-20) Yes - From a support standpoint (and training)
- (R1-21) : Yes - From a support & training standpoint.
- (R1-22) Yes - From a user support and training standpoint
- (R2-1) Yes - Hardware and software prices are in constant flux. Local procurement would allow us to take advantage of local price competition
- (R2-2) Yes - Hardware and software prices are in constant flux. Local procurement would allow us to take advantage of local price competition
- (R2-4) Yes - We eliminated those problems encountered with the Apple purchase by purchasing locally.
- (R2-5) Yes - Less installation problems as occurred with the Apple.
- (R5-0) Yes - This would also enable us to deal with a local person should problems develop.
- (R5-3) Yes - Better price, better service, and better response time
- (R5-4) Yes - Better price, better service, and better response time
- (R5-5) Yes - Better price, better service, and better response time
- (R5-6) Yes - Better price, better service, and better response time
- (R5-7) Yes - Better price, better service, and better response time
- (R5-8) Yes - Better price, better service, and better response time
- (R5-14) Yes - On all other brands
- (R5-15) Yes - On all other brands
- (R5-16) Yes - On all other brands
- (R5-17) Yes - (qualified)
- (R5-22) Yes - It is much faster to deal with your local computer store than with procurement from distant source
- (R5-25) Yes - Sometimes we find them on sale for less than volume pricing was.
- (R6-1) Yes - Better support to hardware/software problems that may occur
- (R6-2) Yes - Get what we want users and line can hold some one accountable, good for local econ, now sufficient comp. for reasonable price.
- (R8-2) Yes - Much easier to get service on locally-purchased equipment
- (R8-6) Yes - Better service after sale
- (R8-7) Yes - Establishes local help source
- (R8-8) Yes - If advantage were GSA schedule can be obtained
- (R8-10) Yes - Most won't service a machine they did not sell
- (R8-12) Yes - Vendor is more willing to provide help
- (R8-27) Yes - This is the only way to expedite needs for processing
- (R9-1) No - Because independent procurement will contribute to the problem of incompatibility and ultimately, duplication of effort.
- (R9-2) Same as above

- (R9-3) Sometimes. Depends on location of user and proximity to service.
- (R9-5) Yes - Sometimes we can obtain better service and save time and money.
- (R9-6) Same as above
- (R9-13) Yes - Possibly better support in area of service, maintenance
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-23) Same as above
- (R9-24) Same as above
- (R9-25) Same as above
- (R10-1) Yes - Travel problems in and out of Juneau makes service difficult
- (INT-2) Yes - Infinitely more advantageous. Local support can save much time and frustration, and in many cases is less expensive.
- (INT-6) Yes - Service might be easier to come by.
- (NC-2) Yes - Maintenance and local answers to questions.
- (NC-3) Yes - Pricewise, yes coordination of procurement needs may be made difficult without local help.
- (NC-5) No - Except for peripherals which are not widely used and are not on contract.
- (NC-6) Yes - Should be a local option.
- (NC-9) Better service when purchased locally.
- (NE-2) Yes - the university has full sales support and training for this equipment.
- (RM-3) Yes - Servicing will eventually be necessary on all hardware. Local service (even trouble shooting over the phone) is critical to timely repair.
- (SE-1) Yes - Local vendors provide an important source of support and should be used.
- (SE-3) Yes - Also get service from local vendors.
- (SE-4) Yes - We could have bought the micro locally at a much lower price, had the vendor install it, and been operating much sooner than with WO procurement.
- (SE-7) Yes - If local vendors are available
- (FPL-1) Yes - Support from local vendors is critical to successful implementation of micro systems.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (WO-2) Yes - Vendor service is usually more satisfactory when local vendors are used
- (WO-7) No - Except for maintenance, I don't think so. Volume discounts should be our objective
- (WO-8) Promotes vendor loyalty.
- (WO-9) Yes - Would have to improve vendor loyalty and availability for assistance in case of need
- (WO-10) Yes - Probably better prices have to deal w/ local vendors for maintenance and assistance - if bought from them they are more friendly
- (WO-11) Yes - This would be better than components coming from all parts of the country
- (WO-12) Yes - Because Radio Shack has good local service

- (WO-14) Yes - An up-to-date model would have been acquired  
(WO-17) Yes - ABSOLUTELY  
(WO-20) Yes - Definitely - if they take responsibility to install and train.  
(WO-21) Yes - In some situations, the needs of a unit can be better met by individual negotiation with local vendor.

- PRO-3      Should requirements-type contracts be negotiated for most popular brands or can a "best" system be defined?
- (R1-3)      Yes
- (R1-6)      Requirements-type best
- (R1-8)      "Best"
- (R1-9)      Microcomputes are for local work & I feel should be bought and used accordingly. There may be some requirements that whatever machine is bought, it be able to communicate w/FLIPS, FCCC, etc., but other than that, the end user should decide on the system.
- (R1-10)     The field is changing too quickly for requirements. Guidance on desirable standards and features is all that should be provided.
- (R1-11)     Requirement-type contracts
- (R1-12)     Negotiated
- (R1-13)     Negotiated
- (R1-14)     There is no such thing as one "brand" that fits everybody. There is a tendency to overbuy!
- (R1-16)     Only if it doesn't delay procurement & allows for working through local vendors.
- (R1-22)     It would be preferable to define a "best" system.
- (R1-23)     The "best" system would depend on need.
- (R2-1)      Neither is necessary. Software and hardware "Standards" are currently being established through competition in the marketplace. All kinds of hardware and software interfaces are being constructed for dissimilar machines. Before the government could agree on and write such standards or requirements, the marketplace will have generated them.
- (R2-2)      Neither is necessary. Software and Hardware "Standards" are currently being established through competition in the marketplace. All kinds of hardware and software interfaces are being constructed for dissimilar machines. Before the government could agree on and write such standards or requirements, the marketplace will have generated them
- (R2-3)      Yes
- (R3-1)      Best system
- (R4-1)      Define "best" system. usable brands
- (R4-3)      There are a number of excellent systems available. Key is compatibility with other micros, FCCC and FLIPS from a communications standpoint.
- (R5-0)      There is no "best" system. There is too much competition and change
- (R5-3)      Yes - Most popular - If meets application or environment requirements
- (R5-4)      Yes - Most popular - If meets application or environment requirements
- (R5-5)      Yes - Most popular - If meets application or environment requirements
- (R5-6)      Yes - Most popular - If meets application or environment requirements
- (R5-7)      Yes - Most popular - If meets application or environment requirements



- (R5-8) Yes - Most popular - If meets application or environment requirements
- (R5-11) Yes - Standary processor and equipment should be defined
- (R5-12) Multiple popular brands would allow a selection range to fit most applications
- (R5-13) In some cases yes but for our Fire Management needs the software we wanted to incorporate was developed for an Apple application
- (R5-17) For computer Aid Dispatch application suggest best system as software has been developed for one particular brand - could be adapted to other brands
- (R5-18) In my opinion Apple is best
- (R5-19) Most popular brands, could be around longer & maintenance could be accomplished more readily
- (R5-20) Suggested list, give some leeway
- (R5-21) Best system should be defined
- (R5-22) Requirements contracts can be better if some applications can be secured by portable micro's
- (R5-24) Best system should be defined
- (R5-25) Need the flexibility to go both ways. The micros are cheaper than a lot of the dumb terminals we buy.
- (R6-2) 2 or 3 best core systems might be defined
- (R8-1) No
- (R8-2) Best system cannot be defined
- (R8-4) No
- (R8-7) Requirements contract for most popular brands should be used
- (R8-8) Yes, but GSA should do this
- (R8-10) Requirements contract for most popular brands is needed
- (R8-12) No
- (R8-13) No
- (R8-14) No
- (R8-18) Yes
- (R8-19) Yes
- (R8-21) Yes
- (R8-22) Yes - Use requirements contracts
- (R8-23) A "best" system should be defined
- (R8-25) There is no "best" system
- (R8-26) A standard "best" system should be defined
- (R8-27) Requirements contract is needed
- (R9-1) A requirements type contract should be negotiated for the most cost effective "BEST BASIC" system and leeway should be left to the office so that it can configure the system to its needs. This way hardware & software incompatibility is eliminated and individual office needs can be accommodated.
- (R9-2) Same as above
- (R9-3) Use "best" system when appropriate.
- (R9-5) Even though we are all similar, our needs do vary.
- (R9-6) Same as above
- (R9-9) The best system is defined in terms of the intended use. There is no absolute best system.
- (R9-10) Same as above
- (R9-11) Should negotiate for requirement-type contract.

- (R9-17) Most popular brands seem to work best due to software availability.
- (R9-19) A "best" system can be defined but should be one of the "more popular brands"
- (R9-20) Same as above
- (R9-26) Same as above
- (INT-1) Due to uniqueness of this application, no "best" could be defined.
- (INT-2) No, a "best" system probably cannot be defined.
- (INT-5) No - Let users purchase on their needs & requirements
- (INT-6) No, each of the projects should be able to select the system that best suits its needs and budget.
- (INT-7) Local units should be allowed to purchase system best suited to their needs.
- (NC-1) No
- (NC-2) A best system cannot be defined for research needs.
- (NC-3) Detailed specs are difficult to establish.
- (NC-5) A "best" system cannot be defined for all micro-applications from research to office to whatever.
- (NC-6) At this point requirements-type contracts are more appropriate to control brand to meet requirements.
- (NC-7) I don't believe you can define a best system for all users.
- (NC-8) I don't believe you can define a best system for all users.
- (NC-9) No "best" system can be defined. Requirements-type contracts would insure efficiency of money spent.
- (NE-1) There is no best system.
- (NE-2) There is no best system. Brand name or equivalent is best procedure. Vendor must prove equivalence.
- (RM-1) Would prefer selection be done on a case-specific basis.
- (RM-3) User needs vary so much that a "best" system could not be defined
- (RM-5) Maybe
- (SE-1) A best system cannot be defined.
- (SE-3) A "best" system for one application may not be for another.
- (SE-4) Let the user decide what he (she) needs - either requirements or brand. The competition among distributors is at least as important as among brands.
- (SE-5) Best system is better for research
- (SE-7) No "best" system can be defined
- (SE-9) No, because what might be quite adequate for some units would not meet the needs of others.
- (SO-1) N.A. to research as needs vary too much
- (SO-2) Requirements should be defined by unit purchasing
- (FPL-1) "Best" system can be defined for FPL needs but this may be different from other units.
- (FPL-2) Same as above
- (FPL-3) Same as above
- (FPL-4) Same as above
- (FPL-6) There is no best system for all applications
- (FPL-7) There is no best system for all applications
- (NA-4) Should be controlled locally under \$10,000.
- (NA-5) Yes. The system with most usable software.
- (WO-1) Requirement-type
- (WO-2) Requirements- Type contracts should be negotiated. There is no such thing as a "best" system.

- (WO-3) Either approach could be successful. Would depend on the range of variability in the needs for systems. Most could be met with "best" systems but some unusual requirements could call for other configurations.
- (WO-4) Both methods have advantages. Depends upon range of variability in need. "best" systems can probably be defined for much use while some special needs might require a different configuration.
- (WO-7) Until the industry is more universal in its OS and applicable software packages, we need to be able to consider several brands
- (WO-8) No "best" system can be defined.
- (WO-9) No "best" system can be defined
- (WO-10) Most popular brands - There is no such thing as a "best" system for all uses.
- (WO-11) I believe a best system can be defined for various price ranges
- (WO-12) A "best" system can not be defined for myriad FS micro applications
- (WO-13) No - Define only the standards we want - not the "best" system
- (WO-14) No "best" system can be defined
- (WO-18) No - There is too much variability in the intended uses
- (WO-21) A "best" system cannot be defined for dynamic technology. Requirements-type contracts should be available to local units only if they judge themselves unable to define their own needs.
- (WO-22) Popular brands - depends on users needs.



FL-1

Are direct interfaces to FLIPS equipment foreseen?

☐ Yes ☐ No

(R1-14) No - Not at this point - not for sure as to opportunity to do so  
(R5-17) Yes - Current micro system ded  
(R5-25) Yes - On a dial up - TTY type interface  
(R6-1) Yes - Input from field offices (private companys) to FLIPs to  
Data processing could be performed  
(R6-2) Yes - RS232 - Bell 212A  
(R8-22) Yes - As work station on LAN  
(R9-1) Yes - All microcomputers have at least 1200 baud asynchronous  
communications capability which makes them FLIPS compatible.  
(R9-2) Same as above  
(R9-3) Yes - If possible.  
(R9-13) Yes - Portability can enhance & augment total computer use.  
(R9-14) Same as above  
(R9-15) Same as above  
(R9-19) Yes - Unfortunately  
(R9-20) Same as above  
(R9-23) Yes - Portability can enhance & augment total computer use.  
(R9-24) Same as above  
(R9-25) Same as above  
(R9-26) Yes - Unfortunately  
(INT-1) No - Not directly from the measuring instrument.  
(INT-2) Yes - Asynchronously  
(RM-3) Yes - Probably  
(SE-1) Yes - We expect to use micro as terminal into FLIPS machine.  
(SE-9) No - Access from the unit at Research Triangle should be  
sufficient and this unit has space limitations.  
(FPL-1) No - Only file to file transfer of data.  
(FPL-2) Same as above  
(FPL-3) Same as above  
(NA-1) Not if it means retooling  
(WO-3) We anticipate that some communication between this micro and FLIPS  
equipment will be implemented.  
(WO-4) Yes - Contined interface to FLIPS equipment is planned in the  
same way as Lexitron WP's are now being used.  
(WO-5) Yes - Unit will be used as FLIPS input device  
(WO-7) Yes - This is possible w/ IBM  
(WO-8) No - This is a possibility but no plans now.  
(WO-9) No - This is possible, but not planned at present.  
(WO-11) Yes - Possibly, not sure what the advantage would be  
(WO-13) Yes - Even though the direct interfaces to FLIPS is desirable  
but the occasions require to interface with FLIPS is very limited  
(WO-21) No - No need is currently seen for a direct interface to FLIPS.



- FL-2      Identify any applications that are now running on microprocessors or planned for implementation on micros that should be transferred to FLIPS equipment when available.
- (R1-5)      Log scale cruise, appraisal budget, TSA Basic Date, tearsheets, freq for scale
- (R1-6)      Spreadsheet, word processor
- (R1-9) 2      Data bases, spreadsheets, electronic mail. Perhaps the best way to look at it is the micro provides the workspace for front end processing. Results can be moved vertically &/or horizontally via FLIPS.
- (R1-10)      Data entry packages, spreadsheet applications
- (R1-11)      Spreadsheets
- (R1-14)      None so far - too early to tell
- (R1-15)      Some spreadsheets, word processing
- (R1-16)      Spreadsheet
- (R1-18)      Spreadsheets and Data Base Management
- (R1-20)      Cost share, spreadsheets, mail labels
- (R1-21)      Cost share, spreadsheet, mail labels, numerous data entry packages.
- (R1-22)      Cost share, spreadsheets, data bases, numerous data entry packages, perspective plots, plotting, traverse
- (R1-23)      Aircraft use, fire reports (various kinds), flight planning & following, Fire Weather, communications.
- (R2-1)      [Just the big change]
1.      We have built a MIS which integrates work planning - attainment reporting & analysis. Three districts and the SO maintain an automated 1900-4 Data base and report accomplishments to it on a monthly basis. The results (Statistical summaries) are reported directly to MARS Report quarterly
2.      We have built a large projection model if the Forest's program and budget for purposes of multi-year PD & B. The program functions are inter-related. For example, the timber staff officer may examine hypothetical impacts on forest roads and road budgets caused by changes in the timber sale program.  
(We will do the adapting.)
- (R2-2)      [Just the big change]
1.      We have built a MIS which integrates work planning - attainment reporting & analysis. Three districts and the SO maintain an automated 1900-4 Data base and report accomplishments to it on a monthly basis. The results (Statistical summaries) are reported directly to MARS Report quarterly
2.      We have built a large projection model if the Forest's program and budget for purposes of multi-year PD & B. The program functions are inter-related. For example, the timber staff officer may examine hypothetical impacts on forest roads and road budgets caused by changes in the timber sale program.  
(We will do the adapting.)

- (R4-3) More sophisticated business graphics can be done on FLIPS but rough layout can be done on micros.  
P.S. It seems strange that the school systems along the Wasatch Front have more micros than the FS entire organization. They are useful TOOLS just like minis, and larger equip at FCCC. Key is making all systems available and suiting the job to the appropriate equipment. There are specific needs at all 3 levels. Let's make available all these tools.
- (R4-4) My initial interest in the Kaypro was to get more computer power for the districts. Initially it looked like it would be a couple of years before the districts received their type B's, but plans have changed and the districts will be getting their B's shortly. My main use for the Kaypro now is for data entry. I plan to enter data on the Kaypro then transfer it to the TI to send to FCCC.
- (R5-9) Some DBM systems
- (R5-11) All spreadsheet applications
- (R5-12) I believe that FLIPS is more than capable of running the CAD system. The Apples will meet our needs until 1986 when we are scheduled for FLIPS.
- (R5-13) Aircraft Use Reporting, Red Card Programs (Fire Qualifications) Fire Statistics, Fire Reports (5100-29), LEMARS
- (R5-14) Word processing, Spread Sheets - However - It would probably make more sense to reconfigure the FLIPS systems to use D.G. micros instead of interactive dumb terminals
- (R5-15) Word processing, Spread Sheets - However - It would probably make more sense to reconfigure the FLIPS systems to use D.G. micros instead of interactive dumb terminals
- (R5-16) Word procesing, Spread Sheets - However - It would probably make more sence to reconfigure the FLIPS systems to use D.G. micros instead of interactive dumb terminals
- (R5-17) Forest law enforcement records (info not used in LEMARS)
- (R5-18) Safety programs
- (R5-20) Got to tell me more about FLIPS
- (R5-23) Weather, indexes, fire facts, prescribed fire Quals
- (R5-25) Maybe spreadsheets. Depends on users needs.
- (R6-2) Spreadsheets, enduser friendly graphics, business graphics, enduser friendly DBMS's
- (R8-2) Internal rate of return, payscales, spreadsheet
- (R8-3) Word processing
- (R8-6) Word processing
- (R8-10) Word processing & inventories
- (R8-12) DBMS, Spreadsheets
- (R8-16) Spreadsheets & data base
- (R8-18) Spreadsheet
- (R8-19) All applications
- (R8-20) WP and inventories
- (R8-21) Word processing and inventories
- (R8-22) Spreadsheet and electronic mail
- (R8-23) All
- (R8-24) Data Base and Spread Sheet
- (R8-26) Data Base and Spread Sheet

- (R9-1) Data bases, word processing, programming - However, distributed processing power with micros definitely has advantages over centralization. After all, FLIPS is distributing processing power away from Fort Collins Computer Center.
- (R9-2) Same as above
- (R9-4) Word processing, data file & program development
- (R9-5) Spreadsheets, data bases, inventories, forms
- (R9-6) Same as above
- (R9-9) Spreadsheets, routine data entry/edit, word processing
- (R9-10) Same as above
- (R9-11) None on the Green Mountain
- (R9-13) Data entry, word processing, local reports, calculations, graphics, data bases
- (R9-14) Same as above
- (R9-15) Same as above
- (R9-16) Word processing
- (R9-17) FES900 Data Entry
- (R9-19) All
- (R9-20) All
- (R9-23) Data entry, word processing, local reports, calculations, graphics, data bases
- (R9-24) Same as above
- (R9-25) Same as above
- (R9-26) All
- (INT-2) None. The functions to be transferred to FLIPS will be from mainframes.
- (NC-1) Possibly graphics package data handling, word processing, data base management.
- (NC-2) The budget formulation tracking system
- (NC-3) Obligation files, permanent salary budgeting, budgeting execution, etc.
- (NC-4) Data entry/edit, statistical analysis
- (NC-5) Actual data collection may be possible on FLIPS equipment the only way we can program the data recorders however are with Apple - dependent software.
- (NC-6) Reports, manuscripts, budget, letters, large data set analysis.
- (NC-7) Electronic mail, statistical analysis, & data base management
- (NC-8) Electronic mail, statistical analysis, & data base management
- (NC-9) Text editing, Budget tracking
- (NE-1) Grants management data base, word processing.
- (NE-2) Budget and word processing
- (RM-1) None
- (RM-3) Manuscript drafting and editing
- (RM-5) Word processing, data entry/edit.
- (SE-1) Forestry Investment analysis.
- (SE-8) Multi-Product Cruise Program (Now being written).
- (SO-1) Process automation, lab data collection, robotics, CAM CAD, Image Analysis
- (SO-2) None forseen at this time
- (FPL-1) Spreadsheets, some DBMS applications, and other Data/Entry edit applications.







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